UNDERSTANDING THE ADOPTION AND DIFFUSION OF INFORMATION TECHNOLOGY RELATED CURRICULA: MULTIPLE THEORETICAL PERSPECTIVES

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Accepted by the Graduate Faculty, Indiana University in partial fulfillment

of the requirements for the degree of Doctor of Philosophy.

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Date of Oral Examination: December 17, 2007

ACKNOWLEDGEMENTS

Passing the exam for the three-year full fellowship administered by the Ministry of Education in Taiwan opened the window for me to pursue a Ph.D. degree in Public Affairs in the United States. I am sincerely grateful to the Ministry of Education for making this opportunity available to me, and to other Taiwanese citizens, and to the tax payers of Taiwan who paid for my Ph.D. education. They made it possible for me to fulfill my childhood dream of attaining an educational level my parents could only wish for but could never afford.

I am profoundly grateful to my dissertation chair, Dr. Roger B. Parks, for his continual support and guidance throughout the course of my Ph.D. program. His flexibility and patience—even after his official retirement—were beyond the call of duty. Without his sincere and deep support, I would not have been able to overcome the challenge of completing my dissertation research and learning to become an independent scholar. I will forever be grateful.

I am also sincerely appreciative of the long-time support from professors Yu-Che Chen and James L. Perry. Their advice and encouragement helped me greatly, and their scholarship and research approach provided excellent role models for me to follow. I would also like to thank professor Barry Rubin for his sound advice and pioneering research related to this dissertation's topic. Professor Yu-Che Chang's advice since the beginning of my study at Indiana University (IU) and professor Giin-Tarng Hwang's inspiration in studying institutional change are also much appreciated.

I will forever be thankful for the generosity of the professors at other institutions who were willing to take the time from their busy academic schedules to grant the

interviews that provided the data for the second empirical study of the dissertation. Their thoughts about the information technology-related curriculum adaptation in master of public administration programs in general, and in their own programs in particular, offered invaluable information and insight for completing the dissertation research.

I also want to express my general feeling of gratitude for the people and institutional environment at Indiana University and the city of Bloomington. IU's School of Public and Environmental Affairs provided me with the opportunity to teach an independent section on research methodology; IU's fabulous Jacobs School of Music offered a great source of pleasure; the campus life afforded opportunities to meet people from all over the world; and the city of Bloomington was a pleasure to live in. Both local and national news programs on public television channels and radios were wonderful for helping me appreciate the culture, politics, and history of the United States. The totality of the environment at Indiana University and in the city of Bloomington made this phase of my life rich and memorable, profoundly impacting my thinking and awareness as a global citizen.

I am particularly thankful for the friendships from Bettina Hahn, Damon Sexton, Linda Allen, Hun Myoung Park, Jing Zhong, Juan Bao, Ji-Tsung Wu, Jeff Huang, Derek Kauneckis, Mete Yildiz, Leah Davis, Donna Pritchett, Mike Gleason, Richard Ruey-Der Twu, Hongwung Wang, Wen-Jiun Wang, Janey Wang, Xian-Tao Yao, Helen Liu, Feng-Wu Lee, Fon-Fei Lin, Charlie Chin, Chih-Cheng Shieh, and Ching-Fei Shih. They offered tremendous understanding, joy, and warmth in my life.

Finally, I would like to thank my original family, my newly-wedded husband, and his family for their unconditional love. They have always been so committed to nurturing

and helping me seize opportunities to grow that I feel I can cheerfully navigate through whatever challenges life brings in the future. I dedicate this work to them.

ABSTRACT

This dissertation conducts two complementary empirical studies to explain why curricular components related to information technology (IT) show different rates of adoption and diffusion in Master of Public Administration (MPA) programs. The first study uses a large-N sample and probit and Tobit regression analyses to explain the variations in core curriculum and concentration offerings related to IT management (ITM). The second study relies on narratives from in-depth interviews to provide a more detailed and nuanced analysis of IT-related curricular decision-making. To interpret the results, these studies draw on four theoretical perspectives: resource dependence theory, institutional theory, garbage can theory, and diffusion theory.

These two studies produce the following findings: 1) faculty size and program ranking are positively associated with ITM concentration offerings; 2) accredited programs and programs with greater faculty size have higher expected ratios of required ITM credits to total degree hours; 3) faculty influence or advocacy; the perception of faculty's core competencies; program development strategies; and responses to broader IT trends in society are the major reasons behind the adoption of IT-related curricular components; 4) programs show different degrees to which they respond to potential sources of pressure to conform to external expectations, norms, or standards, including those from program ranking and accreditation institutions; 5) opportunities furnished by the formative period of a program's development and the restructuring of the core curriculum are often instrumental in bringing about IT-related curricular decisions; and 6) the diffusion of concentrations and that of dedicated requirements related to IT appear to follow independent pathways.

Together, the theoretical perspectives and research design adopted in this dissertation provide a framework for studying organizations' adoption and diffusion of innovative practices. The dissertation contributes to more understanding about the way in which the four aforesaid theories apply to empirical evidence, and it increases the state of knowledge about the adoption and diffusion of IT-related components in MPA programs. The latter contribution will help inform decision makers both in MPA programs and in their accreditation body about the driving forces behind IT-related curriculum design in MPA and related programs in the United States.

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Abbreviations

APPAM	Association for Public Policy Analysis and Management
CIO	Chief Information Officer
IRB	Institutional Review Board (or the Committee for the Protection of Human Subjects at the Indiana University Bloomington)
IT	Information Technology
ITM	Information Technology Management
MIS	Management of Information Systems
MBA	Master of Business Administration
MPA	Master of Public Administration, Master in Public Administration, Master of Public Affairs, or Master of Public Policy
MPP	Master of Public Policy
NASPAA	National Association of Schools of Public Affairs and Administration
PA	Public Administration
PP	Public Policy
USNWR	The U.S. News and World Report

CHAPTER ONE
INTRODUCTION

The emergence of information technology (IT) and information technology management (ITM) as subject areas in the field of public administration (PA) reflects the expansion of IT applications in the public sector, and the need to effectively manage the implementation and performance of IT-related projects. However, the degree to which master of public administration (MPA) programs have adapted their curricula to reflect these trends differs widely. This dissertation conducts two complementary empirical studies, one quantitative and the other qualitative, to explain the differential adoption and diffusion of IT-related curriculum observed in MPA programs, and to explain the decision-making contexts and issues that motivate IT-curricular decision-making. The conceptual framework for these studies is provided by multiple theoretical perspectives from the field of organizational theory.

IT applications in public organizations have evolved over time from automation, to computerized record keeping, searching, and information provision,[1] to two-way transactions and more sophisticated integration across different agencies, different levels of government, and different sectors. Because IT has become intertwined with many organization tasks, the PA literature generally expresses the view that public mangers need to be knowledgeable in ITM. According to a common view, managers cannot

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[1] See Perry & Kraemer, 1979.

expect to delegate important IT-related decisions to their chief information officers if they want a coherent organizational IT framework to facilitate the achievement of their organizational missions (Dawes, 2004; Lan & Cayer, 1994).

Moreover, as IT continues to penetrate into average people's lives and the organizational environment in which they work, many issues (e.g., information network security, IT acquisition and strategic planning, outsourcing, and information policy) have arisen that demand public managers' attention. These issues require public managers to have knowledge in many areas, which involve not only technical aspects, but also financial, administrative, legal, regulatory, cultural, and social dimensions (Gagnon, 2001; Northrop, 2002).

IT investment failures have also led to calls for better educating future public managers with respect to their knowledge and skills in ITM (Brown et al., 2000). Over the last several decades, pubic sector investments in IT and the development of e-government initiatives have increased significantly (INPUT, 2005). In the cases where IT investment initiatives did not perform as well as they had been expected, research suggests that managerial issues, such as organizational strategies, management and leadership, are the main causes of the problems (Brown & Brudney, 1998; Dawes, 2004; Kim & Layne, 2001). A partial list of problems discussed in the literature includes project cancellations, cost overruns, schedule delays, and low functionality or poor performance (GAO, 1994). Lack of integration among computer systems, both within an agency and with other agencies, is another common flaw observed in the implementation of IT

projects. Additionally, many GAO reports have pointed out security problems with a high percentage of public agencies' IT systems.[2]

To improve public agencies' use of IT and to tackle the emerging issues associated with this use and the wider application of IT in society, scholars in the PA field have called for changes in MPA curriculum. MPA programs in the United States have responded to varying degrees and with different kinds of strategies and approaches to MPA curriculum design. This differentiated response may partially reflect some uncertainty about the appropriate venue for IT-related training. For example, it is sometimes suggested that on-the-job training, rather than academic training, would best fit each organization's IT tasks. But even though most states provide some IT training for their employees, the training tends to be application-centered with little appreciation of the broader organizational, social, or political aspect of IT used in the public sector, according to one study (Schelin, 2004). According to this study, on-the-job training can help update the skill sets of employees, but it is debatable whether it is a suitable venue for providing a broader perspective that would allow an adequate understanding and appreciation of all critical issues, as well as the requisite methodology to tackle complex ITM tasks. According to a number of scholars, PA education can contribute to filling this gap (Bobcock et al., 1995; Brown & Brudney, 1998; Brown et al., 2000; Jennings, 2002). This viewpoint, in fact, has been endorsed by the 2002 recommendation of the technology committee of the National Association of School of Public Affairs and

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[2]   For example, GAO-04-376, GAO-04-706 and GAO-05-567T.

Administration (NASPAA), which added IT to the list of core curricular components for MPA programs (NASPAA, 2003).

Although the general endorsement by NASPAA suggests a growing consensus in the PA field about the need for IT-related curriculum in MPA programs, some scholars believe that MPA education has not adequately responded, e.g., Kettl (2000). Brown et al. (2000) also observe that the IT education offered by MPA programs usually lags behind public sector needs for competence in this area. Whether or not such assessments continue to hold, the differentiated empirical pattern actually observed with respect to IT-related content in MPA programs raises some questions. First, why do MPA programs differ in their adoption of IT-related curricula? And secondly, what factors motivate MPA programs to decide what IT curricula to offer to their students, and how does the specific program decision-making context affect their curricular decisions? To date, the PA literature on MPA program curriculum assessment appears to be at the beginning stages of considering these questions, no doubt due to the recent and rapid development of IT in the context of public administration and the relatively recent emergence of IT and ITM as decision issues for MPA curriculum design.

This research substantially augments the existing literature on the assessment of IT-related curricular development in MPA programs. The research objective is to more fully explain the factors which motivate IT-related curricular decision making within MPA programs, to better understand the contexts surrounding IT-related curricular decision making, and to better describe the processes of adoption and diffusion of IT-related curricular elements across MPA programs. The first empirical study devoted to this task involves a large sample (n=187) multiple regression analysis using probit and Tobit

statistical models to assess whether the observed or hypothesized relationships in previous studies are consistent with the evidence, and to provide a model for additional hypothesis testing. The second empirical study attempts to broaden and deepen the understanding about IT-related curricular decision making using a qualitative analytical approach based on the case study method. Analyzing the text-based data from interviewing a sample of fourteen (14) knowledgeable MPA faculty members and administrators about the IT-related curricular decision making in their own programs, this study fleshes out the first empirical study with the rich information provided by the interviewees' own knowledge and perspectives.

The two studies in this dissertation are based on multiple theoretical perspectives, including resource dependence theory, institutional theory, garbage can theory, and diffusion theory. The findings of this study increase knowledge and understanding about the decision processes and contexts motivating the adoption of innovative IT-related curriculum, and offer insights about the usefulness of using multiple theoretical lenses to holistically assess organizational behavior, such as that related to IT-related curriculum decision-making. At the practical level, the findings have implications for NASPAA accreditation standards and MPA programs which are contemplating the design or redesign of their IT-related curriculum.

Before beginning to develop the subjects this dissertation takes up, some advance terminological clarification is necessary. First, there are ambiguities and inconsistencies with respect to the meaning of "IT," and the ways in which this term is conventionally used in the academic literature on MPA programs. This study uses an encompassing adjective "IT-related" to describe the topics, courses, or curricula that cover the technical,

managerial, or policy aspects of competencies pertinent to the use of information technology. An "IT-related curriculum" is defined as a collection of curricular components that aim to equip students with IT-related capabilities. Commonly-seen formats for these curricular components include stand-alone courses in the core curriculum, elective courses, concentration offerings, and topics integrated into courses that do not focus principally on IT or ITM.

Unless otherwise noted, the designation "IT' in this dissertation by itself refers to the technical aspects of information technology; in contrast, "ITM" denotes a knowledge area at the intersection of IT and PA, embodying managerial and policy issues related to the use of IT.

A second terminological issue is the way the term "Master of Public Administration" is defined. In this dissertation, the term is broadly defined to encompass all of the programs included in the accredited programs roster published by the Commission on Peer Review & Accreditation of NASPAA, and the associated master's programs of degree-granting institutional members of the Association for Public Policy Analysis and Management (APPAM). The titles of the degrees covered in these sources include Master of Public Administration, Master of Public Affairs, Master of Public Policy, and similar programs.

With these terminology distinctions clarified, it is possible to proceed to the rest of the dissertation. It is organized in the following way. Chapter 2 discusses the theoretical perspectives to be used to assess the development of IT-related curricula in different MPA programs. Chapter 3 reviews the literature in PA that specifically assesses the state of IT-related education in MPA programs. Chapter 4 discusses the methodological

framework and theoretical underpinning of the two empirical studies. Data sources and methods for both empirical studies are also discussed in this chapter. Chapter 5 develops the first empirical study and explains the results, while Chapters 6 through 9 conduct the qualitative analysis of the data derived from the sample of fourteen interviews. Chapters 6 to 9 are differentiated by the different theoretical lens they use to analyze the interview data; specifically, chapter 6 employs the perspective of resource dependence theory; chapter 7 the perspective of institutional theory, chapter 8 the perspective of garbage can theory, and chapter 9 the perspective of diffusion theory. After these analyses, the final chapter of the dissertation summarizes the principal findings and offers concluding remarks.

CHAPTER TWO
RELEVANT THEORETICAL PERSPECTIVES FROM
ORGANIZATIONAL THEORY

This dissertation is premised on the view that multiple theoretical perspectives are useful for explaining organizational behavior and when taken together, offer a more complete and nuanced conceptual framework for empirical analysis than any one theory alone. In this spirit, this dissertation relies for conceptual guidance on four theories of organizational behavior: resource dependence theory, institutional theory, garbage can theory, and diffusion theory. These theories have been used in the public administration literature to explain similar organizational phenomena, and share some common focal points, as well as some differences in the primary variables thought to drive organizational change and decision-making.

In the following sections, I will describe each of these theories in turn. Then, the next-to-the-last section will compare and contrast these theories, pointing out some elements of similarity and difference. The final section of the chapter will offer a brief conclusion.

Resource Dependence Theory

Resource dependence theory adopts a contextual perspective on organizational decisions and activities, and its central thesis revolves around organizations' dependence on its resource environment and how this dependence shapes organizational actions. Organizations are seen as engaged in a constant struggle with stakeholders in the

environment over organizational decision-making, seeking to strike a balance between maintaining autonomy and gaining support from these stakeholders (Pfeffer & Salancik, 1978).

The environment in which the organization is situated presents resource constraints and opportunities for the organization. The degree to which an organization depends on a certain stakeholder is determined by the importance of the stakeholder-controlled resource to the organization's continued operation and survival, and the level of control the stakeholder has over the resource's allocation and use (Pfeffer & Salancik, 1978). The stakeholder will have more influence on organizational decision-making to the extent that the resource is more critical and the stakeholder has greater influence to distribute it.

Resource dependence theory sees organizational change driven by environmental impacts perceived by major stakeholders of the organization. The perception of these stakeholders is a function of the attention they dedicate to the issue, the knowledge they have about the issue, and their interpretation of and sensitivity to environmental impacts. According to Pfeffer and Salancik, "Environments become known through a process of enactment in which perceptions, attention, and interpretation come to define the context for the organization." (Pfeffer & Salancik, 1978: 260) They argue that stakeholders of the organization may dedicate different degrees of attention to the same environmental event; their perception, knowledge, and interpretation of and response to environmental impacts vary; and their mechanisms of gathering, screening, and selecting information can be different as well (Pfeffer & Salancik,1978: 13-18). Thus, for example, the following observation by Brown et al. is not inconsistent with the theory: "While the professional and academic communities have come to accept as a given the increasing use of

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computer technologies in public agencies, they have reached far less consensus on the impacts of that use, or how graduate education in public affairs and administration should prepare students for careers in government." (Brown et al., 2000: 11)

From the lenses of resource dependence theory, the adoption of IT-related curricula in MPA programs would result from critical stakeholders' perception and interpretations, or the way stakeholders unpack their knowledge of IT impacts. Because these factors might differ across different MPA programs, this theoretical perspective can be used to help interpret why MPA programs are developing IT-related curricula at different rates, and why some ITM and policy courses have yet to diffuse to some PA programs.

Overall, resource dependence theory is somewhat deterministic in the way an organization's external environment is seen to shape organizational decision-making, with resources being the key environmental factor. To the extent that a particular resource is critical for an organization's continued operation or survival, the organization will try to maintain and acquire it. In contrast, organizations in a less constrained resource environment will have more flexibility in using their resources. Following from resource dependence theory, for example, one might hypothesize that MPA programs with a larger faculty or student enrollment size or larger budgets are more likely to offer a more advanced IT-related curriculum than those programs facing greater resource constraints.

Institutional Theory

Sociologists, psychologists, political scientists, economists, and organizational theorist offer a variety of explanations for organizational behavior and institutional

development. There are some common views among these groups, but differences emerge as to the unit of analysis, major driving forces behind organizational behavior, assumptions about the cognitive capacity of the individual and the organization, the degree to which individual and organizations are assumed to be autonomous, and how an organization interacts with its outside environment.

This dissertation draws on a particular strand of the literature on institutional behavior--the institutional theory pioneered by Meyer and Rowan, DiMaggio and Powell, and Tolbert and Zucker. Below I explain the theoretical lenses offered by these theorists.

Meyer and Rowan (1976) see formal structures of organizations as a myth, ceremony, and symbol. For Meyer and Rowan, rules existing in the institutional environment reflect complicated dynamics among various social groups who might have different values or competing interests. Through a mechanism that they call "institutional isomorphism," organizations perceive myths that encourage them to respond to the institutional environment by incorporating the prevailing practices and rules in their formal organizational structure. As a result of institutional isomorphism, the formal structures of many organizations in postindustrial society resemble each other. A manifestation of institutional isomorphism in the context of this study would be the general diffusion of IT-related content into different MPA curricula, as well as the homogeneity of IT-related components in different MPA curricula in terms of the kinds of IT-related education that are offered or required.

What is the rationale behind institutional isomorphism? Meyer and Rowan argue that organizations that follow pervasive institutional rules increase their legitimacy and their survival prospects. In other words, organizational survival depends heavily, if not

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exclusively, on the organization's ceremonial conformity to society's institutional rules. By formalizing rules popular in the institutional environment, the organization acquires a symbolic meaning of conformity and thus buffers its members from further scrutiny into whether the rules are enforced. Consequently, structural elements of the organization can be only loosely linked to each other and to activities; rules can be violated, and the consequences of the violation can be uncertain as the rules might not be enforced; decisions can be unimplemented; innovations or technologies that are adopted can have problematic efficiency; and evaluation and inspection systems can be so vague as to provide little coordination and have few consequences.

In the case of MPA curricula, to the extent that IT-related curricular development is driven by the perceived need to stay current with the curricular trends that are popular among leading MPA programs, and the resulting curriculum revision is conducted without studying the actual fit of the revision to the program's goal, available resources, or student needs, then such a revision can be seen as a response to the pressure from the institutional environment in a way that is consistent with the institutionalist thesis. This kind of decision-making would suggest that the adoption of IT-related curriculum could be driven by its largely symbolic meaning, possibly to ultimately solicit more resources.

Meyer and Rowan's concept of organizational rationality contrasts with another prevalent paradigm that sees organizational rationality as the embodiment of economic efficiency. The focus of Meyer and Rowan's concept of organizational rationality is not on internal organizational characteristics. Rather, it is on external arrangements and elements that have acquired social meanings, in the interpretation of (Tolbert & Zucker, 1999). This group of theorists challenges the proposition that organizational efficiency or

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the coordination and control of organizational activities are the critical determinants of

organizational behavior. They also challenge a conventional idea that says a rationalized

organizational structure is the most effective way to coordinate and control the complex

relational networks involved in modern technical or work activities. In other words, the

institutionalists' view on organizational rationality stresses the environmental influence

on organizational behavior. In the context of this dissertation, the following would tend to

support Meyer and Rowan's proposition that organizations just take rules in the

institutional environment for granted: for example, little assessment or evaluation

precedes adaptation initiatives to incorporate IT into the curriculum, or the adaptation

initiative is not well integrated with the exiting curriculum.

Like Meyer and Rowan, DiMaggio and Powell (1983) also contend that

institutional isomorphism leads to homogenization in decisions made by different

organizations. They also discuss how institutional pressure causes organizations to

become more similar, and posit that institutional isomorphism is a function of

constraining process that forces one organization to resemble other organizations that

face a similar set of environmental conditions. They explain why this isomorphism

happens by categorizing institutional pressures into three classes: coercive, mimetic, and

normative. For example, the ranking institutions such the U.S. News and World Report

(USNWR) might in effect exert some coercive pressure on MPA programs to following

their ranking criteria; NASPAA accrediting mechanism seems to have a similar effect

with its IT component recommendations in its curricular standards (NASPAA, 1981,

1988, 2003, 2005, & 2006a).

In summary, the institutional perspective described is even more deterministic

about the environmental influence on organizational behavior than resource dependence theory. Institutional theory focuses on the similarities in institutional arrangements across different organizations and provides an explanation for these similarities.

Garbage Can Theory

Garbage can theory views organizational decision processes in the context of a not-so-ideal world. In circumstances where the policy process can not be ideally pursued as prescribed in the traditional rational choice approaches,[3] garbage can theory looks into policy circumstances where the definition of problems, potential policy alternatives, and decision rules are less than clear; policy goals are conflicting; information about the consequences of policy alternatives is incomplete; and decision participants exhibit limited cognitive capacity and unstable or elusive preferences. Overall, the way garbage can theory links policy decision elements depends more on their simultaneity and symbolic meanings than on their actual contents (March & Olsen, 1983; see also Cohen, March & Olsen, 1972).

According to March and Olsen, the "garbage can" metaphor is used to refer to choice arenas in which "highly contextual combinations of people, choice opportunities, problems, and solutions" get lumped together largely by coincidence, much like the different streams of objects end up together in a garbage can (March & Olsen, 1983:

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[3] See, for example, Nagel,1984a and 1984b; Stokey & Zeckhauser, 1978; and Weimer & Vining, 1999.

286). In their view, "garbage cans" in the organizational environment are manifested as "organized anarchies," which are characterized by ambiguous goals, unclear technology, and fluid participants. Therefore, organizational decisions cannot be understood via the intentions of organizational participants, and imposing a rational explanation on organizational behavior can only distort what is really going on (Bendor et al., 2001: 171).

When problems, solutions, and decision principles are ambiguous, the participants are likely to engage in elaborating, clarifying, and defining the problem and potential solutions. Different participants can perceive or define the problem in different ways. Likewise, changes and solutions, such as MPA curricular modifications can also mean different things to different actors. Therefore, which actors are involved in the process of adaptations has an impact on outcomes. Regardless who is involved, ambiguities can extend the time needed to come up with solutions. However, ambiguities also can be an asset in the sense that they create a grey area that allows actors to discover and define their own interpretations. In the playing field where there are simultaneously different actors with different needs, priorities, preferences, and frames of reference for interpreting the problems and solutions, March and Olsen liken the policy situation as "collections of solutions looking for problems, ideologies looking for soapboxes, pet projects looking for supporters, and people looking for jobs, reputations, or entertainment." (March & Olsen, 1983: 286)

Another important component of garbage can theory is its view about the symbolic meaning of human behavior. March and Olsen posit gaps between what people say, what they do, and the real consequences of their actions (March & Olsen, 1983:291). For

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example, the uses of the sacred symbols of efficiency or constituency pressure in the rhetoric endorsing organizational change do not guarantee an outcome that is more efficient or responsive to constituents. Instead, the uses of the symbols are a reflection of social beliefs and a manifestation of enforcing dominant cultural values. In this regard, garbage can theory shares a similar perspective with institutional theory on the symbolic meanings of conformity to institutional rules for organizational survival. As March and Olsen maintain, the declaration of taking on an organizational change initiative "symbolizes the possibility of effective leadership, and the belief in that possibility may be of greater significance than the execution of it" and, as such, it can be "a tactic for creating an illusion of progress where none exists" or "an alternative to action." (March & Olsen, 1983: 290)

The symbolic nature of organizational change is consistent in this view with the lack of interest in organizations for monitoring and evaluating the change they initiate. To the extent that a reorganization effort takes care of meeting the social expectation for leadership, the management as well as the stakeholders may lose their interest in following up the real effects of the program, which requires a certain attention span. In March and Olsen's view, sustaining the attention of major stakeholders can be a challenge as stakeholders tend to be caught up with immediate emergencies or crises. Furthermore, the agenda of relevant stakeholders might evolve over time to the degree that objectives that used to be high on their agenda might receive lower priority. Consequently, when the task involves long-term planning, implementation, or evaluation, loss of focused attention from significant stakeholders can be a problem, unless the system of meaning shared among critical stakeholders successfully evolves in favor of a

long-run organizational development, which March and Olsen believe is not usually seen in the empirical world. Therefore, comprehensive organizational change, if any, is likely to be accumulated by incremental adaptations, a process Linblom calls "muddling through" (Linblom, 1959, 1979); additionally, these adaptations might not be coherent in their content.

Diffusion Theory

Diffusion theories look at how innovations diffuse across organizational boundaries. "Diffusion" is defined as the process of "the communication, spread and adoption of new ideas among social communities" (Van de Ven et al., 1986: 243). Because IT-related curricula are relative new among MPA programs, diffusion theories provide a potentially-useful theoretical perspective for this study.

In the innovation diffusion literature, whether or not an idea is considered new hinges on adopters' perspective (Walker, 1969; Rogers, 1995). This characterization of innovations is in line with the definition of Van de Ven et al. (1986: 242) of innovation as: "a socially constructed process involving the development and implementation of new ideas." Based on this definition, no matter how old an idea is or how many other organizations have adopted it, as long as the adopter views it as new, it is an innovation. Therefore, an organization that simply copies an innovative idea that has been used by other organizations can still be an object of interest to innovation diffusion theorists.

The literature on the diffusion of innovations draws on a wide array of sources, and contains some concepts consistent with the theories discussed in previous three sections

(see O'Neill et al., 1998). For instance, what diffusion theorists such as Abrahamson and Rosenkopf (1993) describe as the "bandwagon effect" seems to be consistent with "organizational isomorphism," as described in the institutional literature.

Diffusion theories have yet to be applied to the study of MPA curricular modifications, but they have been used to study the adoption and diffusion of innovations in private, non-profit, and public sector contexts. In the literature on innovation diffusion, whether an organization adopts an innovation is shown to depend on a variety of organizational or individual factors. On the organizational level, the attributes of organizations that have been linked to innovation adoption or diffusion include professionalism, slack resources, administrative performance, existence of a central IT department, and the size, form, and type of the organization. On the individual level, major factors revolve around potential adopters' training and computer background. Additionally, the effects of geographical region and metropolitan status (urban or rural) of the organization, as well as the organizational environment have also been considered (Norris & Moon, 2005).

Newell et al. (2000) offer a contrasting perspective on innovation diffusion. Instead of associating organizational or individual characteristics with organizations' adoption and diffusion of innovations, they develop a diffusion model that focuses on the process of spreading the ideas and knowledge underpinning the innovation. They see diffusion and adoption of innovations as a process of integrating knowledge across disparate communities. They also argue that potential users need to unpack this knowledge and integrate it with existing organizational knowledge. Consequently, the way potential users unpack this knowledge and integrate it with existing organizational knowledge

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affects how the knowledge is used in the organization. This perspective mirrors some ideas Pfeffer and Salancik offer in the resource dependence theory they propose.

Rogers (2003) looks into how innovations spread and group the roles of actors in the innovations diffusion processes into five categories: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards. In the earlier phase, the "early adopters"--often respected opinion leaders--adopt the innovation. After a while there is enough adoption to be more widely noticed, and for those who have noticed the adoption to have their uncertainties about the innovation diminished. Once this critical mass is reached, the innovation is rapidly adopted by the early majority--and the innovation's spread becomes self-sustaining (the "domino" effect). This rapid rate of increase diminishes over time as the market becomes more saturated, and the base for computing the rate change becomes larger. This pattern yields an overall S-shaped curve for the growth and spread of innovations overtime (Rogers, 2003: 12).

Comparison and Contrast

This section offers a comparison and contrast of the theories to try to derive some additional perspective about them. Table 2-1 summarizes some key points of the theories, emphasizing areas of connection or overlap. To start, consider row 1, which compares institutional theory with the others. Recall that in institutional theory, "coercive pressure" is one of the three major mechanisms or processes that can potentially lead organizations to adopt structural norms or standards imposed by external pressures to conform. "Coercive pressure," in the sense that it is talked about in the literature on institutional

theory, seems consistent with the kind of pressure organizations might perceive from powerful stakeholders as described in the literature on resource dependence theory (row 1, column 2). In fact, Tolbert and Zucker talk about the overlapping propositions of resource dependence theory and institutional theory (Tolbert and Zucker, 1999:173-174).

Insert Table 2-1 about here

Institutional theory also shares similar constructs with garbage can theory (row 1, column 3). In both, symbolism plays a role in influencing decisions, but in somewhat different ways. In the institutional theory of Meyer and Rowan, organizations adopt structural arrangements that have acquired social meanings into their formal structure for the symbolic purpose of signaling organizations' commitment to socially desirable ends. In the garbage can theory of March and Olsen (1983: 290), an organization's declaration of taking on an organizational change initiative "symbolizes the possibility of effective leadership, and the belief in that possibility may be of greater significance than the execution of it."

Institutional theory and garbage can theories might also have some overlaps in particular circumstances involving institutional review and interaction, for example, NASPAA accreditation or re-accreditation. From the institutional perspective, this kind of review makes for conformity pressure that might induce changes or review in a program's curriculum. From the garbage can theory, such review might constitute a "choice opportunity" which could grab the attention of program decision-makers, leading to changes or review in a program's curriculum (again, row 1, column 3 of Table 2.1).

Turning to the relationship between institutional theory and diffusion theory (row

1, column 4), we can see some significant commonalities. In institutional theory, the second kind of potential pressure leading to institutional isomorphism--the mimetic mechanism--is reminiscent of the views in diffusion theory about the way in which later adopters eventually imitate the actions of earlier adopters. Both theories might hypothesize, for example, that an institution lacking innovative IT-related curriculum might observe an institution which does have such curriculum, and adopt the curriculum based on that observation. Diffusion theory and institutional theory would both argue in this case that the organization initially without IT-related curriculum would be modeling its behavior in response to the actions of "opinion leaders" or the behavior of another organization.

Notwithstanding these similarities, the focus and emphasis of institutional theory and diffusion theory differ slightly. Beyond the fact that institutional theory is all-encompassing, whereas diffusion theory focuses more specifically on organizational behavior around innovation, the latter theory also has an explicit hypothesis about the rate at which innovations are adopted over time. In contrast, institutional theory does not explicitly address the temporal aspects of organizational change, for example, theorize about the rate of change or pattern of change of organizational behavior over time.

The comparison now turns to resource dependence theory and its relationship to the others theories. Since resource dependence theory was already compared to institution theory above, I start by comparing it to garbage can theory (row 2, column 3 in Table 2-1). As one point of commonality, the "stakeholders" concept in the resource dependence theory and "decision participants" in the garbage can theory seem similar. In both cases, the actions of self-interested actors are seen as crucial to the outcome of organizational

behavior. Moreover, resource dependence theory allows for "sense-making" on part of stakeholders of their resource environment, just as different participants in garbage can theory can perceive or define environmental attributes or decision-issues in different ways.

Notwithstanding these similarities, resource dependence theory differs from garbage can theory in seeing organizational behavior as fundamentally linked to the desire to acquire and maintain resources, whereas, garbage can theory allows for more idiosyncratic decision-making outcomes depending on what happens to be dumped in to the decision-making garbage can at any particular moment.

Resource dependence theory also seems to share a common element with one view of organizational response in diffusion theory (row 2, column 4). For example, the enactment process described by Pfeffer and Salancik in resource dependence theory seems similar to the description offered by Newell et al. (2000) of the way organizations unpack the knowledge they have about the outside environment and integrate it within existing organizational structures; specifically, the way in which organizations observe and incorporate knowledge about innovative processes.

Turning to the final comparison between theories which has not yet been made--the relationship between garbage can theory and diffusion theory--it can be observed that although these theories differ in many ways, they have one element in common (row 3, column 4). From a garbage can theoretical perspective, the opinion of leaders could play a role in organizational decision-making, assuming such opinions are expressed in a moment of choice opportunity. In the diffusion theory Rogers proposes, opinion leaders are seen as playing an instrumental role in innovation diffusion.

Conclusion

In this chapter it was seen that the four theories of organizational behavior have different emphases, but also points in common. They each have insight to offer, without being mutually exclusive. The empirical work in the dissertation will draw inspiration from all of these theories, in the hopes that this synthetic, big picture approach will yield greater understanding of the IT-related curriculum adoption process than would the reliance on any one of the theories alone.

Table 2-1: Overlapping Constructs Across Theories

	Institutional Theory	Resource Dependence Theory	Garbage Can Theory	Diffusion Theory
Institutional Theory	****	▪ Role of coercive pressure	▪ Symbolic meaning of organizational actions ▪ Choice opportunities around institutional involvement	▪ Role of imitative behavior
Resource Dependence Theory		****	▪ Role of participants, decision makers and their preferences and agenda ▪ Individualistic interpretation of environmental attributes	▪ Enactment
Garbage Can Theory			****	▪ Emergence of opinion leaders
Diffusion Theory				****

CHAPTER THREE
LITERATURE REVIEW ON IT AND ITM IN MPA CURRICULUM

This chapter reviews the research that specifically focuses on the IT components in MPA curricula. This literature can be grouped into three major categories: descriptive, prescriptive, and explanatory studies. Below, I discuss the major themes and directions of this literature in each category.

Descriptive Research

The descriptive stream of the literature on the diffusion of IT into MPA curricula started in the early 1980s and focused mostly on describing 1) the IT training offered or required by MPA programs, 2) stakeholder viewpoints about the IT curricular component, and 3) the extent to which the current IT component in MPA curricula meets certain criteria, mostly notably, NASPAA recommendations. I discuss each of these research topics in the three sections that follow.

IT Training Offered or Required

To promote the preparation of MPA students to function in a managerial environment in which computer literacy was becoming more important, NASPAA organized the Ad Hoc Committee on Computers in Public Management Education in the mid-1980s, and subsequently published a report on the subject by Kraemer et al. (1986). Along with some other pioneering research (see, for example, Gorr, 1982; Munzenrider, 1981; and Sorg, 1981, as cited in Kraemer et al., 1986), this report documented the

diffusion of computerization into MPA pedagogy at the time. Also around the same time, Kiel (1986) found that some MPA programs had started to offer elective courses in managing information systems (MIS), database management systems, systems analysis, decision support systems, introduction to computers, data/file structures, software design, systems design, and information analysis.

Since the late 1980s, studies report that 70% to 90% of MPA programs have integrated computer skills within traditional MPA courses to some degree (Brown & Brudney, 1998; Brown et al., 2000; Waugh et al., 1995). However, courses specifically dedicated to IT showed a lower degree of penetration in the same period, but the trend was increasing. Additionally, the offered courses had evolved from computer applications (statistics, spreadsheets, data management, word processing, and database management) to courses specifically involving information management and e-government topics (Brown & Brudney, 1998; Brudney et al., 1993; Cleary, 1990; Pavlichev, 2004).

A similar trend is seen for IT-related requirements for MPA degrees. In 1986, only 15% of the MPA programs required a course on computer applications (Kiel, 1986). By the mid-1990s, the percentage increased to 56% (Brown & Brudney, 1998)**,** but required courses often still involved only entry-level computing skills (Brown & Brudney, 1998; Brown et al., 2000; Brudney et al., 1993). And it was not until after the year 2000 that the group of MPA programs incorporating courses specifically dedicated to IT into core curricula reached 10% (Pavlichev, 2004).

This trend in curriculum development reflects both a general evolution in opinion on the part of NASPA decision-makers about the degree of "computer literacy" (Kraemer et al., 1986) needed for MPA students to function as competent professionals and the

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development of the IT field itself. In the last two decades, IT has seen unprecedented development, with the proliferation of the Internet being the most notable development. The Internet started to flourish about a decade after the 1986 NASPAA report (i.e., Kraemer et al., 1986) and has changed the mode of communication in many areas of the world. In turn, this development has impacted the way governments operate. The emergence of e-government courses in MPA curricula to some extent mirrors the application of this technological development in public agencies.

Interestingly, however, the degree of IT development among MPA programs parallels the broader social context in the sense that the so called "digital divide" also exists among MPA programs. The gap in IT development among programs is manifested in the content of the courses offered, the total credit hours of IT courses that are offered or required, and whether or not ITM is offered as a concentration, area of study, or certificate program. For example, while 45% of public affairs programs already offer e-government or IT as a concentration area, students of 50% of these programs rely on other schools to receive IT training (Pavlichev, 2004), and most MPA programs have only one to three courses dedicated to IT content (Rocheleau, 2004). The first part of the empirical research of this dissertation will try to look into the black-box of this "digital divide" and provide an explanation based on empirical evidence.

Stakeholders' Views on IT in MPA Curricula

The second category of research in the descriptive group of studies describes the views of four major groups of actors involved with IT curricular development; specifically, PA faculty (for example, Kiel, 1986); MPA students (for example, Brown et

al., 2000); prospective employers of MPA students (for example, Kraemer & Northrop, 1989); and the institutional representatives of MPA programs (possibly the program directors) who respond to surveys for studies in this category.

This category of literature attempts to assess stakeholder views about the IT status quo within their program, as well as their expectations or goals for future curriculum development. Even though the term "stakeholder" is not generally used in these studies, it fits the characteristics of the four major groups of actors mentioned above in the sense that these actors may control certain resources MPA programs rely on. As discussed in the first section of chapter 2, the concept of "stakeholders" is one of the central components of the resource dependence theoretical lens, and the concept will be applied in the empirical section of this research.

Conformance to Evaluation Criteria

The third category of the descriptive group of studies examines the extent to which the IT component in MPA curricula conforms to certain evaluation criteria. In general, this literature suggests MPA education in the U.S. has not adapted sufficiently to prepare future public managers and policy makers to handle the complexity associated with the rise of IT in public service (Baker, 1997; Brown & Brudney, 1998; Chakraborty, 2000; Kiel, 1986; Kim & Layne, 2001; Kraemer et al., 1986; Kraemer & Northrop, 1989; Labaree, 1996; Leip, 1999; Lynch & Lynch, 2001; Perry & Kraemer, 1993; Reed, 1999; Rocheleau, 1998; Scavo & Shi, 2000; Stowers, 1999). In making this assessment, some studies use explicit criteria/standards. The sources of these criteria include the NASPAA curricular standards for IT component (Brown & Brudney, 1998; Dawes, 2004; Kiel,

1986; Roeder & Whitaker, 1993) and the so-called "CCA concepts," which are derived from the Clinger-Cohen Act (P.L. 104-106) that requires public agencies to adopt stricter standards in IT project selection, procurement, management, and evaluation processes to improve agency accountability and the performance and benefits of IT investments (Brown & Brudney, 1998; Brown et al., 2000).

In my view, methodology issues could conceivably compromise the validity and generalizability of this group of studies. The studies that rely on mailed-in surveys do not control for the characteristics of the MPA programs, and the measurement validity of some self-reported data in this group of studies needs to be examined. In my research, I will try to minimize these methodological concerns by using the methods elaborated in Chapter 4.

Prescriptive Research

The prescriptive strand in the IT literature on MPA education has been evident since the general literature began. As Rocheleau observes: "In IT, we tend to be very prescriptive on how IT should be done" (Rocheleau, 2004: 13). In general, prescriptive studies revolve around the transformation asserted to be necessary for public administration curricula to meet the challenges public managers face in the information age. The recommendations provided for the transformation, though, are not necessarily consistent (Brudney et al., 1993; Brown et al., 2000). Researchers mainly debate two issues: the IT content that should be taught or required, and the way IT content should be integrated into MPA curriculum.

IT Course Offerings and Requirements

The IT training public management researchers have advocated has evolved over the last two decades. For example, Lan & Cayer (1994) contend that the connotation associated with "computer literacy" has changed from just knowledge of computer applications to developing an understanding of the strengths and limitations of using computers as a tool for empowering human beings. Most importantly, the rapid emergence of the Internet and ever-emerging new technologies creates new issues and challenges for teaching IT in MPA programs (Rocheleau, 2004). This evolution has been paralleled by changes in recommendations over time (Brown & Brudney, 1998; Brown et al., 2000; Dawes, 2004; Jennings, 2002, Kim & Layne, 2001; Kraemer & Northrop, 1989; Kraemer et al., 1986; Pavlichev, 2004; Schelin, 2004). In general, these recommendations' emphasis has shifted from computing appreciation and use to strategic management and planning of information systems as well as alignment of IT use with organizational goals.

An alternative view in the literature on the proper content of MPA programs' IT training considers the diversity inherent amongst MPA programs, and proposes a set of factors to consider in determining what IT training should be offered or required. The factors Rocheleau (1998) proposes to consider include the focus of the program, including the level of administrator the MPA program is targeted to train; the nature of students, including the skill sets of entering students; expectations of prospective employers with regard to the level of training they expect for MPA students; and the program's resources, including faculty skill levels. Similarly, Jennings (2002) suggests resources, institutional setting, and faculty background and perspective as relevant factors

to consider.

To some extent, the above alternative perspective rejects one-size-fits-all curricular standards, and leaves room for MPA programs to pursue different IT development paths in accordance with their own program objectives, student and faculty IT backgrounds, and special constraints and opportunities in using program resources. Consistent with this line of thinking, assessing student needs in IT training would help the MPA program best tailor the IT content in its curriculum (Rocheleau, 2004). Should programs follow this flexible recipe, they will demonstrate a number of alternative formats for IT training.

IT Component Delivery

The approaches that have been proposed in the literature for how to deliver an IT component within MPA curricula include: 1) integrating IT into traditional courses, and 2) offering dedicated IT courses. I will discuss each of these alternatives below.

The earliest literature generally expressed the view that integrating computerization into existing courses was more desirable than developing stand-alone courses (Kiel, 1986). This approach would not involve the additional cost of developing new course offerings; moreover, software applications (e.g., statistical packages and spread sheets) could be relatively easily incorporated into existing courses, such as financial management and budgeting. Researchers also suggested integrating computer use and information system knowledge into most courses (Kraemer & Northrop, 1989). After almost two decades, this integration approach has been extended to the competence-based IT content supported by Kim and Layne (2001) and Rocheleau (2004) (discussed in the "alternative views" section below this section).

However, with the rapid emergence of IT, it is not surprising that dedicated IT courses are also advocated to address IT issues particularly relevant to public agencies (see, for example, Brown & Brudney, 1998; Kraemer et al., 1986; Kraemer & Northrop, 1989). The proponents of this approach argue that offering new courses allows for appreciation of a broader range of issues that have emerged, which involve managerial, legal, financial, ethical, economic, and other dimensions. They believe that these courses can address issues at the intersection of IT and PA, which have become complicated enough to be treated as subject matter in their own right.

However, offering stand-alone IT courses is not mutually exclusive with incorporating IT content in traditional MPA courses. Many researchers who advocate offering or requiring dedicated IT courses also endorse continued integration of IT content within PA courses. Some examples of such IT content would be planning for IT (Rocheleau, 2004); alignment of IT projects with agency objectives (Dawes, 2004); digital civic engagement (Schelin, 2004). Nevertheless, to the extent that basic computer skills (e.g., using word processing and spreadsheets applications) are widely mastered by students, the importance of offering dedicated courses for these kinds of skills recedes. By setting requirements in course assignments, instructors of traditional PA courses can induce students whose basic computer skills lag behind at the start to acquire necessary skills.

Alternative Views

There exists an alternative view that goes beyond the dichotomy of integrating IT component into traditional public administration courses or offering new courses. This

view stresses the competencies, concepts, topics, areas of knowledge or skills that MPA students need to build necessary capacities for their future career. In this approach, the recommendations are usually categorized into several groups or modules, which can be delivered as components in traditional courses or new courses. This approach is consistent with NASPAA's standards with respect to IT component in MPA curricula, because NASPAA standards do not imply any specific set of course requirements. Essentially, a component can be covered by one course, by part of one course, or by parts of several courses (NASPAA, 2003 and 2005).

Other alternative delivery mechanisms are suggested by Kim & Lane (2001). They propose delivering IT training through one-credit modules, online seminars, or devices, such as CD-ROMs or online training that may involve a partnership with NASPAA or other PA or public policy-related educational institutions, such as American Society or Public Administration, the National Academy of Public Administration, and Association for Public Policy Analysis and Management.

Another related issue is the host that can best administer IT training. Most IT curricular recommendations imply or presume that MPA programs would be the host. At issue is whether other departments or schools (such as business school, departments of computer science, informatics, or information management) can play an adequate or even better role in providing the IT knowledge and skills that MPA students need. The NASPAA Ad Hoc Committee on Computers in Public Management Education (Kraemer et al., 1986) and Pavlichev (2004) both argue against using alternative departments to provide MPA student with IT training. However, a quick review of MPA curricula reveals that MPA programs often do rely on other departments to provide IT training for

MPA students (Rocheleau, 1998). This result may partially explain Rocheleau's finding that most MPA programs have only one to three courses dedicated to IT content (Rocheleau, 2004).

Explanatory Research

The explanatory research focus has accounted for a small portion of all research on the IT components in MPA curricula. The limited number of empirical studies asking the "why" questions may derive from the fact that this area of study started comparatively late. Below I will discuss the variables that have been examined to explain different degrees IT has been adopted and diffused in MPA curricula and some associated methodological issues.

The MPA programs' institutional affiliation and the number of trained faculty in the program are the two major explanatory variables looked at in an earlier study to account for the level of computer skills training presented in MPA curricula (Kiel, 1986). Curricula in programs housed in departments of public administration were found to have more computer training and training in MIS tailored for public administration issues than in the curricula in MPA programs based in departments of political science. Departments with more trained faculty in IT also had a greater degree of IT development in their curricula.

Brudney et al. (1993) consider the impact of a range of institutional arrangements, including (1) when the MPA degree is affiliated with a political science department; (2) when the MPA degree is housed in a PA department in a college of liberal arts or college

of business, and (3) when the MPA degree is in a stand-alone school of public administration. The other independent variables they examine include the MPA program's NASPAA accreditation status, whether the program is in a public or private institution, enrollment size, and faculty size. In another study, Cleary (1990) also links the accreditation status to the IT training MPA programs offer.

These studies have mostly used descriptive statistics, such as central tendency to display distributions of variables, and cross-tabulation is the major method of associations between variables. Multiple regression and hypotheses testing have yet to be adopted by scholars interested in explanatory research on IT's diffusion into MPA curricula. Consequently, it is questionable whether these studies adequately control for all explanatory factors. Thus, the existence, strength, direction, and pattern of the associations among variables in these studies as well as the statistical significance of these associations remain unclear.

To sum up, the variables that have been used to explain IT development status among MPA programs provide interesting focal points for future research, but the aforementioned methodological issues have compromised the interpretability of these studies' results. In contrast, this research will use multiple regression and related statistical techniques to check the observed or hypothesized relationships in previous studies and to provide a more secure foundation for hypothesis testing.

CHAPTER FOUR
DATA SOURCES AND METHODS

This dissertation conducts two empirical studies that aim to explain why IT-related curricular components show different rates of adoption and diffusion in MPA programs. The theoretical motivation for these studies draws on different parts of the theoretical literature reviewed in chapter 2, and the studies also employ different methods of data collection and analysis.

The first study is a statistical analysis based on a data set of 187 MPA programs. This study focuses on explaining the variation in ITM curricula across MPA programs. Its variables and hypotheses are largely suggested by resource dependence theory and institutional theory. Probit and Tobit regression analyses are the major methods employed. Hypotheses are tested to ascertain the effects of independent variables on dependent variable proxy measures for the degree of ITM component penetration into MPA programs.

The second study conducts 14 in-depth interviews from eight MPA or similar programs to assess the decision-making processes and contexts by which MPA programs have adapted curricula in response to IT development in public agencies. This second study complements the first study by providing greater understanding and detail about the factors affecting IT-related curricular decision-making. This study also adds additional information about the contexts in which programs' curricular decision-making occurs. In addition to resource dependence and institutional theories, garbage can theory and diffusion theory are used to motivate the empirical approach of the study.

I now will discuss the data collection and analysis methods of the first and second empirical studies in the following two sections. The final section summarizes this chapter.

Explaining Variation in ITM Curricular Adoption Among MPA Programs

As explained in the first section of chapter 3, IT curricula in MPA programs have seen a general evolutionary trend from software applications embedded in traditional courses to dedicated courses on information management or emerging issues at the intersection of IT and PA. However, the point in this evolution that individual MPA programs have attained varies across programs. This study takes each individual MPA program as the unit of analysis, and uses a cross-sectional data set to explain the variation in ITM curriculum development among MPA programs in the United States. Below I will discuss the variables and the hypotheses to be tested, and then describe the data sources and methodology. I will then explore potential limitations of the data and data characteristics and how I address them.

Variables

Two dependent variables are used in this study to measure ITM curriculum development:

1. Whether or not ITM is offered as a concentration or specialization.
2. The degree to which ITM is required in MPA core curricula, measured as the ratio of stand-alone ITM credit hours required in the core to total credit hours required for the MPA degree itself.

The explanatory variables for this study include:

1. Faculty size, measured as the number of full-time faculty in the MPA program.

2. Whether or not the MPA program is affiliated with a PA school (as opposed to, for example, housed in a college of arts and sciences).

3. Overall ranking of the MPA program, based on the 2004 ranking data of the U.S. News and World Report (USNWR).

4. The existence of other schools or departments that provide ITM training to MPA students. Such schools and departments are limited to those of informatics or information science.

5. Accreditation status of the MPA program; specifically, whether or not the program is NASPAA-accredited.

Hypotheses

The aforementioned explanatory variables are proxy measures whose inclusion is motivated from resource dependence theory and institutional theory. Table 4-1 links the variables, the theories, and hypotheses examined in the study.

Insert Table 4-1 about here

All the hypotheses will be tested using regression analyses--specifically, probit and Tobit models--which will enable a clean assessment of the partial impact of the independent variables on the dependent variables holding constant the other factors that could affect the comparison.

The explanatory variables "faculty size" and "the existence of other schools or

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departments offering ITM training to MPA students" reflect the resources available to MPA programs for ITM delivery. From the viewpoint of resource dependence theory, programs strive to maintain and acquire critical resources. Less resource-constrained programs are likely to have lower opportunity costs in allocating resources to non-traditional-PA fields. As a result, they should be more flexible in offering innovative curricula. Thus, I hypothesize that MPA programs with larger faculty resources are likely to be in a more advanced stage of ITM curricular development than programs which are more resource constrained, holding other variables constant.

The impact on ITM curriculum of the variable "whether an MPA program has other departments or schools on the same campus that offer ITM training available to MPA students" is not clear a priori. One possibility is that there is a substitute relationship between other campus ITM offerings and that of the MPA program in which case, MPA students could access ITM course resources without the MPA program diverting its own resources to this end. Based on resource dependence theory, the program then is likely to use its resources on other areas. In that case, less advanced ITM curricular development will be observed in the MPA program when other campus units offer it.

Another possibility is that the presence of ITM related courses on other campus units represents a university-wide commitment to ITM, which may be the result of some other factors, such as earmarked funding for developing ITM at the university. In that case, one would expect a positive relationship among ITM curricular offerings among different campus units.

In sum, because the hypothesized relationship between ITM curricular development within the MPA program, and the rest of the university, is ambiguous, the data will be

relied upon to differentiate the empirical actuality.

Whether or not an MPA program is affiliated with a school of public affairs/administration/management/policy has to do with not only how the decision makers of the MPA program perceive the implications of IT development for curriculum, but also on the resources available. Previous research finds that separate MPA programs are more likely to offer IT courses than those housed in departments of political science (Brudney et al., 1993; Hy et al., 1993; Kiel, 1986). Although such a research finding is not based on a controlled hypothesis testing, it is consistent with the resource dependence theory thesis that emphasizes the importance of the perception and interpretation of information by critical stakeholders for organizational decision-making. Following from this, it seems likely that decision makers responsible for designing the curriculum of an MPA program that is based in a PA school will more likely be aware of IT's impacts on the PA field than will be their counterparts in non-PA schools, and they will also be more likely to act on this awareness by developing more sophisticated ITM training for their students.

The accreditation status of the MPA program reflect the program's overall conformity to the curricular standards NASPAA sets, which includes standards for IT components (Kraemer et al., 1986; NASPAA, 1981, 1988, 2003, 2005, and 2006a). Even though the NASPAA curricular standards do not contain any specific minimum course requirement, some MPA programs appear to have responded to these standards (Roeder & Whitaker, 1993). From an institutional view, if a program is accredited, it is more likely to adopt the components in the standards. In this vein, we can also hypothesize that programs with higher rankings are more likely to have more advanced IT development in

their curricula, holding other factors constant.

Data Sources, Variable Measurement, and Coding

The population for this study is the MPA programs in the United States. Because there is not an exhaustive list of such programs, I combined three sources to make the data set as inclusive as possible. These three sources are: 1) the accredited programs roster from NASPAA's website, 2) the results from searching "Academic Degree Granting--Full-Time Masters" on the "searchable directory" of APPAM's institutional members on the association's website, and 3) the Master of Public Affairs rankings list published by the USNWR. The final data set consists of 187 programs. APPAM's member institutions database was accessed in September of 2005 and periodically throughout the data collection period. The first NASPAA roster used was the September 2004 edition, and the data were updated through the September 2006 edition. The USNWR ranking data were published in "America's Best Graduate Schools 2004." All the degree titles of programs examined in this empirical study can be found in Appendix A.

With the sample of MPA programs defined, I collected data from several sources in the period September 2005 to January 2007 on the variables needed for the study. Websites of MPA programs were surveyed to determine required ITM credit hours, whether ITM is offered as a concentration, total credit hours for completing the MPA degree, faculty size in each program, program affiliations (whether or not the MPA program is housed in a PA school), and availability of other departments or schools that offer ITM courses on the same campus where each MPA program is located. NASPAA's

accredited MPA programs roster, which is published on NASPAA's website, provided the data on the accreditation variable. Finally, reports published by USNWR were used to provide the information on the MPA programs' overall rankings.

Below I detail the measurement and coding procedures, as well as data sources, for each variable included in the study.

Whether There is an ITM Concentration

The dependent variable "whether there is an ITM concentration" is measured by examining the curricula MPA programs publish on their websites. Almost all programs in the data set describe their curricula on their websites, and the curricula almost invariably contain a section explicitly listing concentrations that students can choose from to develop their own area of specialty.[4] Nevertheless, there are different labels applied to different kinds of course clusters in individual curriculum. These variations include such designations as "areas of study," "specializations," "policy areas of concentration," "policy tracks," "area clusters,' "specialty areas," "majors," "sections of program electives," "career support areas," "career tracks," and so forth.

A program that has any of the above-labeled concentration types is coded "1;" otherwise it is coded "0" for this variable. Many programs allow for some degree of flexibility to let students, if necessary, go beyond the concentrations listed on their program websites or handbooks and design an area of specialty from individual choice

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[4]   For the programs that concentrations information could not be found on their websites, I emailed the programs to obtain their handbooks/program catalogues.

and consultation with a faculty advisor. In other words, in programs that have this flexibility, students' concentrations choices are not limited to what are officially documented in program requirements. Even though it is likely that programs that do not include ITM in their concentrations list might have students who develop this area as their area of specialty, a close examination reveals that the listed areas of concentrations usually reflect the strengths of faculty specialty areas and the courses that are offered within the program. Thus, serious bias is not likely to be injected by only including explicitly-named concentrations.

Credit Hours Required in the MPA Core as a Percentage of Total Degree Hours

Data for this dependent variable were also collected from program websites that list the program curriculum. To calculate the percentage, two pieces of information are necessary. First, the number of ITM-dedicated credit hours that a program requires all MPA students to take are needed. If a program has any ITM course required for all students, then the numerator for the percentage takes on the value of credit hours for the course, otherwise this numerator is zero for the program. The second part of the ratio--the denominator--is the total credit hours required for the degree. This information is listed in the "curriculum" or "program requirements" section on all program websites or handbooks.

The decision to define this dependent variable as a percentage was motivated by the fact that credit hours are not necessarily commensurable across programs. The credit hours needed for completing an MPA degree actually range from 18 to 81 in the MPA programs in the data set, with 43.6 being the average. This asymmetry requires that

"required ITM credit hours" be standardized as a fraction of total degree hours, to allow for meaningful comparison across programs.

The criterion used for deciding whether a required course is an "ITM course" is whether the course focuses on the application or implications of IT in policy or managerial settings. Therefore, courses focusing on rudimentary computing, such as word processing or spreadsheets are excluded. In case a course title does not give enough information to judge if the course fits this criterion, I tried to find the syllabus or course description.

Faculty Size

Turning to independent variables, the variable "faculty size" is measured as the number of faculty in the program. The faculty size of each department is collected from program websites (in most cases) or program handbooks/catalogues/bulletins. If an MPA program is housed in a school without a departmental affiliation, or the program is housed in a department but only school faculty information is available, then school faculty size is measured. Additionally, only full-time faculties are measured; clinical, visiting, and adjunct faculties, lecturers, post-docs, and emeritus professors are all excluded.

Whether or Not the MPA Program is Affiliated With a PA School

Programs coded "1" for this independent variable are for programs within a school of public affairs, public administration, public service, public policy, or government. The schools in question may have the names of allied fields in their title, such as environmental affairs, non-profit management, or health administration. In contrast,

programs that are housed in a school or college whose main focus is not public affairs or public policy are all coded "0." Examples of such schools and colleges include school of business administration, school of management, school of architecture and planning, school of social sciences, schools of international and public affairs, schools of education and social policy, colleges of arts and sciences, and college of business and public administration.

Availability of Other IT-related Schools/Departments

"Availability of other IT-related schools/departments" is measured by examining the website of the university where the MPA programs is a part of for each program. I searched "information" on each university website and coded "1" if the results turned up any degree program, department, or school (other than the program at issue and the department or school where the program is housed) that offer ITM courses; otherwise the variable is coded "0." Programs coded "1" for this variable vary in terms of the alternative sources of ITM courses their students can find. These sources include program of management information systems, Master of Science in ITM program in schools of business, departments of information systems, schools of information and library science, schools of information sciences, schools of informatics, departments of operations and information management, and so forth.

Overall Ranking

The ranking data are from the USNWR's "American's Best Graduate Schools

2004,"[5] which contains the overall rankings of master of public affairs programs. Because there are 50 universities that are on this list, it is also known as the "top-50 MPA" list, while the actual rankings go from 1 to 46 (some universities tie in their rankings).

Accreditation Status

The data for this variable are from the "Roster of Accredited Programs" published annually by NASPAA's Commission on Peer Review & Accreditation. The data set (n=187) used in this study reflects all the accredited programs in the latest (2006-07) roster, which was effective in September, 2006. The first page of the roster says there are 158 programs that have been accredited, but there are actually only 155 programs in the roster.

Accredited programs are coded "1" while unaccredited programs are coded "0" for this variable.

Characteristics and Possible Limitations of the Data

I myself compiled the data set used in this study and it is original. I now discuss some of the data limitations and my efforts to minimize their impacts.

First, the websites used for information might not have been up-to-date when the curricular and program characteristics data were collected. To minimize this problem, I

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[5] The rankings are based on a survey. USNWR obtained lists of programs from NASPAA and APPAM. Survey respondents "were asked to rate the academic quality of programs based on their assessment of all factors bearing on excellence, such as curriculum, record of scholarship, and quality of faculty and graduates" (USNWR, 2004).

maintain a list of program websites and links to other departments or schools on campus that offer ITM courses which is periodically monitored for new information. These web links have facilitated verification of the accuracy of the data and updating them whenever I find there are any changes. These links will help future researchers replicate or update this study. Even though a significant number of programs seem to change their program web links from time to time, usually the links only change partially (most likely in the latter part of the web address), and sometimes people clicking an old link are redirected automatically to the new web address.

Second, the definition of "ITM courses" is relatively conservative, in that it does not consider integrated ITM components in traditional PA courses, nor does it consider dedicated courses on computer applications or basic computing skills. In the first instance, incorporating topics about IT's application in organizations and its managerial or policy implications into Public Management, Public Policy Analysis, Financial Management, or any other typical MPA courses has been an popular trend, and this incorporation represents an important dimension of ITM education in MPA programs. It is also one of the major ways MPA students can receive their ITM exposure. The decision to exclude this element is mostly based on the fact that course syllabi are still not a standard item on MPA programs' websites; thus, it is hard to gauge the degree to which courses have integrated IT components. Moreover, time constraints do not permit the efforts necessary for obtaining these syllabi and an extensive survey of them to determine which might contain some ITM topics. In any event, such an exercise would lead to methodological complications, requiring some metric for defining "ITM course content," which would be hard to standardize across curricula. Thus, I choose to use the more

conservative measure, recognizing that it will miss the early stages of IT's evolution in some programs and could miss the IT curricular developments in the programs entirely that have made the heuristic choice of embedding ITM topics in traditional PA courses rather than developing stand-alone ITM courses (see the second section of chapter 3 for more discussion on this topic). The second empirical study tries to capture this "integrative" dimension of IT-related curriculum in MPA programs.

The third possible limitation of this study's data arises from the fact that programs do not have a standard way of listing their faculties. Some programs list only the nucleus faculty for the MPA program; some programs list the faculty in the department; some programs list the entire faculty in the school. To further complicate the issue, some programs include adjunct, visiting, joint-appointed, or emeritus faculty members in their faculty listings, and often websites do not categorize faculty by appointment status. Because the "faculty size" variable in this study only measures the full-time faculty in each program, I sifted through all faculty listings, looked into every single faculty member's appointment status therein whenever possible (for example, by clicking on the name, if it is a web link), and counted only those who fit my measurement standard. As a result, there is a sum of 2,697 full-time faculty members for all 187 programs in my data set.

Fourth, ranking data involve a few methodological issues. First of all, the USNWR master of public affairs rankings list contains only university names without specifying the exact titles of the degree programs that are ranked. Because the unit of analysis for this study is each MPA program, when ranked universities offer multiple graduate degree programs that are related to public affairs, converting these ranked universities to a

programs list becomes an issue.

For example, Carnegie Mellon University is on the "top-50 MPA" list, and its Heinz School of Public Policy and Management offers nine master's programs. The School's website that details its USNWR rankings refers to the rankings as for its "graduate programs in public affairs."[6] Both Master of Public Management and Master of Science in Public Policy Management among these nine degree programs fall into the "graduate programs in public affairs" category; they are also the only two programs from the School that are on NASPAA's accredited MPA roster. Therefore, I included both programs in my data set. Additionally, American University is also ranked on this list and it offers three master's degree programs that are in the public affairs domain and are all on NASPAA's accredited MPA list. Therefore, I included all three programs in my data set. Consequently, the total number of the top-50 MPA programs in my data set is 52.

The second issue about rankings is about coding unranked programs. Specifically, there are ordinal rankings for the top-ranked programs, but then a large group of simply unranked programs. Thus, how to code this variable for the empirical work is an issue. The method for handling this coding problem is discussed fully in the second and third sections of chapter 5.

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[6] The School's website says: "The Heinz School's graduate programs in public affairs once again rank among the nation's elite, according to U.S. News & World Report magazine's qualitative and quantitative analysis of "America's Best Graduate Schools, 2005 edition. The Heinz School was ranked 8th overall among schools of public affairs." (from http://www.heinz.cmu.edu/whatsnew/archives/2004/usnews_05.html, accessed on Jan. 7, 2007 from the World Wide Web).

Turning to the characteristics of the data set for this study, the data set is a subset of the population, and programs in it are not selected by random sampling methods. Instead, I try to make the data set extensive enough to represent the entire population, by incorporating all the U.S. MPA programs I could locate. Still, it is arguable if this data set is complete, and if not, how representative it is. Because all programs on the NASPAA accredited MPA programs roster, APPAM institutional members list, and the USNWR rankings lists are included in the data set, the programs most likely to be left out are small programs that neither meet NASPAA's accreditation standards nor are established enough to be top-ranked. Nevertheless, small programs account for a significant portion of the data set. Twenty-two percent (n = 41) of programs in the data set have a faculty size smaller than or equal to 6, and less than thirty-eight percent (n=70) of programs are housed in a public administration or public policy school. It thus seems likely that the difference between this data set and the actual, complete population of all MPA programs in the U.S. should be relatively small.

The Decision Processes and Contexts of IT-related Curricular Adoption and Diffusion Among MPA Programs

The second empirical study attempts to provide more detail and context about the adoption and diffusion of IT-related curricular components in MPA programs by interviewing a sample of faculty members and administrators. The aim of this study is to broaden and deepen the analysis by accessing the rich information provided by the perspectives of interviewees (hereafter "informants"). The additional information also

allows one to consider a fuller range of theoretical perspectives, encompassing the four

theories of organizational behavior discussed in chapter 2. Because these four theories

emphasize different aspects of organizational decision making, they complement each

other and afford a multi-dimensional explanation of the decision-making underlying the

adoption and diffusion of IT-related curricular elements in MPA programs. Overall, the

purpose of this second empirical study is to develop a coherent and holistic picture of IT-

related decision making as a way to complement the insights developed in the first

empirical study.

Below I explain the methods employed for this study. First, I explain how I

developed the sample of the eight cases this study examines and the rationale for the

within-case sampling. The second part of this section explains the set-up and protocol for

the interviews. The third and fourth parts lay out the framework and methods used for

analyzing the data from these interviews. Finally, the last part details how I maintain

interview records and report results to keep confidential the identities of the participants

involved in the interviews.

Sampling and the Number of Observations

Sampling in this second empirical study is a two-fold process. First, a purposive

sampling strategy was employed to narrow down the 187 U.S. MPA programs to 8

programs. The following variables were used to create the sample: (1) faculty size, (2)

whether or not there is an ITM specialization, and (3) whether the MPA program is

affiliated to a PA department or school. The result was the selection of a final sample[7] containing eight diverse programs with the following aggregate features:

- The faculty size of the eight programs in the sample ranges from 7 to 35, with an average of 18;

- Four programs offer IT-related concentrations, and three programs have a dedicated IT-related course in the core curriculum, with one program offering both and two programs offering none;[8]

- Five programs are part of a PA or PP school, whereas the other three programs are part of other schools, colleges, or research centers;

- Seven programs are MPA programs, whereas the other program is an MPP program;[9] and

- Six programs are NASPAA-accredited.

The second step was to select individuals for interviewing within this sample. The key criterion was familiarity with their programs' IT-related curricular development. The

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[7] Whenever I could not receive a positive response to an interview request from a potential informant from the initial sample selected, I substituted another program with similar attributes for this potential informant's program.

[8] An informant's program used to offer an IT-related concentration, but it was removed shortly before the interview with the informant took place. Therefore, it is included in counting the number of programs with an IT-related concentration in the sample of this study.

[9] For confidentiality and conciseness reasons, all these programs are referred to as "MPA programs" hereafter.

difference between "informants" and "respondents" is the unique knowledge the former have, and the within-case sampling strategy employed in this study was designed to assure that subjects were knowledgeable about the interview topic.

Of course, a different within-case sampling procedure would probably have resulted in different representation of the "reality" for each case. For example, students or potential employers of these students might have a different perspective about the IT-related curricular elements in each program than the faculty. Even among faculty members, there might be different views between those who are better or less well informed, for example, or who are more or less interested. However, given the time and resource constraints of this study as well as mandatory procedures preceding interviews for the protection of human subjects, I limited the within-case sampling to the faculty members who were most likely to be familiar with MPA programs' IT-related curricular decision making. For each case, I tried to interview at least two key informants.

In total, 14 in-depth interviews were conducted, making the number of interviews for each case range from one to three. Most informants are full-time MPA faculty members; two informants are from a non-MPA program. These two informants are faculty members from a department that supports an MPA program in IT-related courses offerings. Among the 14 informants, five of them have a teaching or research interest related to IT; six are or used to be the director of their MPA program; two are chairs of the department which houses the MPA program; one is deputy dean of the school where the program is housed; one is the chair of a non-PA department that offers IT-related courses for MPA students; and one is a faculty member from a non-MPA program that offers IT-related courses for the MPA program at the same university (Table 4-2).

Insert Table 4-2 about here

Although the interviews were conducted within a short period of time, the questions asked during these interviews tried to assess the IT-related curricular evolution that had taken place in programs over a period of time. Decision issues programs have confronted include whether to offer a stand-alone IT-related course in the core curriculum, whether to offer a concentration in the IT area, whether to offer elective courses related to IT, how to integrate IT-related decisions into courses in the curriculum, and so forth. Because the major unit of analysis of this study is IT-related curricular decisions, and information related to these decisions was obtained from multiple questions that were asked in the interviews, this study contains more observations than the number of interviews conducted.[10]

Institutional Review Board Approval and Interview Protocol

Indiana University Bloomington ("IUB" hereafter) has a Committee on the Protection of Human Subjects, which is the equivalent of an Institutional Review Board at some other academic institutions ("IRB" hereafter). In addition to its approval for conducting the interviews for this study (see Appendix B), IUB's Committee on the Protection of Human Subjects required an agreement from the IRB's of potential informants' universities before I started to contact their faculty members. Only after each IRB agreed did I start sending recruitment emails (see Appendix C) to potential

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[10] See "observations" defined by King, Keohane, and Verba (1994).

informants in the MPA program of the university.[11] The MPA programs at the universities whose IRBs did respond and agreed to let me interview their faculty were not my final sample, because some of the potential subjects I contacted did not accept my interview requests, which resulted in changes in the composition of the sample. Therefore, I submitted an amendment to the IRB at the IUB.

This study initially planned to conduct in-person interviews, which proved to be more costly than the resources available for this study. Additionally, such interviews would have required more complicated logistical coordination to minimize travel costs given the facts that the cases are located throughout the United States, most of the interviews for this study were conducted during the informants' summer break, and at least two interviews were intended for each case. Since the first approval from the IRB at IUB was for in-person interviews, I amended it for adding phone interview as one of the formats and modified the recruitment email accordingly.

Among the 14 interviews that were completed, 13 were conducted over the phone, and one was conducted in person. This in-person interview was completed in two sittings, which took place at the break times of two academic conferences. All the interviews were conducted from May to November of 2006, with most interviews completed in the summer of 2006. Among the 14 interviews, 13 interviews were audio-recorded with approval from informants and the IRB at IUB.

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[11] Some IRB's also required approval from their PA departments or schools before contacting their MPA program faculty members.

Interview Protocol

The interview protocol (Appendix D) contains open-ended questions, which are used to guide the interviews following a semi-structured format. I tailored these questions to fit the specifics of each MPA program in the sample. During the interview, informants were free to elaborate beyond the listed questions. Follow-up questions were asked for clarification. The open-ended structure of the questions with follow-up for clarification was instrumental in bringing about narratives with rich information content, ones which uncovered unanticipated issues and explanations.

The ideas contributing to the design of the interview protocol come from multiple sources. The findings of the first empirical study provided a starting point. For example, questions regarding the roles of NASPAA and ranking institutions, as well as faculty are the first questions that go into the protocol. Second, the four aforementioned theoretical lenses encouraged the development of perspectives and foci which motivated interview questions. For example, the roles that different stakeholders play in IT-related decision making are important focal points in the questions, and programs' institutional environment is another main category for questioning.

Third, a pilot interview conducted in April, 2006 helped me identify potential ambiguities in the questions in the initial interview protocol. Ambiguities were corrected to enhance the clarity of the questions. After the pilot interview, the questions were grouped into four categories, which were spelled out at the beginning of each interview to help informants gain some advance understanding of the interview to come. The four categories are: 1) the evolution and background of IT-related curricular revisions in the program, 2) the internal resource and institutional environment and how the elements

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therein have affected the curricular adaptations in the MPA program, 3) the external

resource and institutional environment and how the elements therein have affected the IT-

related curricular adaptations in the MPA program, and 4) their assessment of the IT-

related curriculum.

Using these focal reference points, I developed a process-based model for

designing the interview protocol (see Figure 4-1). This model not only helped my

thinking about relevant questions to include into the interview protocol, but also helped

my framing of questions to pursue during the interviews. Below I explain this model.

Insert Figure 4-1 about here

The first process block "motivations, perceptions, & goals" is characterized by the

key elements that prompt MPA programs to take actions to modify their curriculum--or

to keep it the way it is. This block also includes the general level of students' IT-related

knowledge and skills, the level of IT-related competencies an MPA program expects its

graduates to have; how the MPA program positions itself in terms of IT-related curricular

development compared to other MPA programs; and the assessment of the IT-related

curricular trends among MPA programs, if any.

The second process block incorporates the resources and institutional environments

surrounding each MPA program's IT-related curricular decision making. Adding another

parameter--internal or external to the program environment--allows for the emergence of

a two-by-two sub-framework for assessing the importance of resource and institutional

environments on IT-related curricular decision-making.

The third block represents a full-spectrum of IT-related curriculum development,

with the aim of eliciting information about the structure of each of the informant's programs along the many dimensions possible.

The forth block describes the post-curricular-adaptation evaluation, which can reflect the factors described in the first block. In essence, this block is for assessing if the program has conducted any ex post assessment, and if the goals that the program set out to achieve through the curricular design or adaptations have been achieved.

Given this structure for the interview protocol, the outcome measures for assessing IT-related curricular decision-making and development are not limited to the dependent variables examined in the first empirical study. To reiterate, the dependent variables in the first empirical study are the existence or absence of an ITM concentration, and the ratio of required ITM credit hours to the total in the MPA program. In contrast, the second empirical study of this dissertation can consider such additional dimensions of IT-related curriculum as whether there are any IT-related elective courses, whether IT-related courses are taught by in-house or outside-the-department faculty members on other campus units, and the extent to which programs rely on embedding IT-related topics into courses to offer IT-related exposure to students.

To an even greater degree, the explanatory factors considered in this study go beyond the independent variables examined in the first empirical study. Informants were asked open-ended questions like "what were the major considerations behind the decision to include the X concentration or Y specialization in your program?" Informants could respond freely to such questions, offering a more nuanced and complete description of causal factors underlying the decision contexts and processes of the IT-related curricular decision making in their programs than was possible to hypothesize about a priori in the

first empirical study.

Developing an Analytical Framework

Post the interview period, the responses of those informants who had agreed to be recorded were transcribed and added to the field notes taken from the informant who did not agree to be recorded. Together, these transcriptions and notes totaled to close to 200 typed pages.

It was necessary to develop an analytical framework for processing this information. In particular, a taxonomic system needed to be devised that was not only structured enough for condensing and organizing the information, but also comprehensive enough so that the condensed results would not end up losing important information.

The development of the analytical framework involved an interactive process between two procedures: formulating a family of abstract concepts and postulating the inter-relationships among them on the one hand, and then bringing the resulting formulation to empirical data to see its applicability, on the other. While four theories-- resource dependence, institutional, garbage can, and diffusion theories--played a guiding role in the conceptual development of this framework, the test against the data yielded an analytical framework that ultimately was inductive and grounded in empirical data. Below I detail the process in which the framework was developed.

The first step was data immersion, which involved carefully reading the transcripts and field notes of each informant. Several tasks took place concurrently during this phase: 1) points that seemed consistent with the various theoretical construct were

indicated on the hard copies of the transcripts and field notes, 2) important quotes were highlighted, 3) conceptual maps were drawn which diagrammed the conversational threads of informants with respect to the factors causing program decision-making, and the feedback among them.

This immersion was crucial for gaining insights about each case and for cross-case comparisons. For example, it allowed the organization of responses by different theories, or similar conceptual maps, facilitating comparison across theories and cases.

As a result of this data immersion, I decided it would be analytically useful to consider the informants' responses from the perspective of each of the four major theories discussed in chapter 2, creating ample space for connecting each theory to the data. It seemed that more information and insight about data patterns and associations could be established by breaking down the initially-intended overarching framework into four theoretical sub-frameworks, and using them as a reference point for organizing the data analysis. This approach in fact drives the organization of chapters 6-9 of the dissertation, each of which considers the evidence contained in the interview responses through the lens of a different theory of organizational behavior.

Of course, the four theories discussed in the literature have some elements of overlap as discussed in the last section of chapter 2, and informant's interview responses are expansive, without necessarily following one particular theme. Thus, a particular interview response may contain elements suggested by more than one theory. To the degree possible, informant's responses have been divided up among chapters on the basis of their relevant emphasis. However, at times there will be some redundancy where this partition could not be made cleanly.

It should be stressed that the goal of this second empirical study of the dissertation is not to test which organizational theory has the most explanatory value. Such a test would not really be possible in any event because the theories are not mutually exclusive, or exhaustive. Rather, the theories differ in their emphases in terms of which attributes of organizational environments are seen to be particularly relevant, and so they focus on different kinds of explanatory variables. This dissertation draws on all of the perspectives contained in the organization theories, using the insights from these theories as a heuristic aid to think about the data. In particular, the theoretical constructs help organize and think about the informant narratives, which, as mentioned, are discussed in chapters 6 to 9 specifically in terms of each of the organizational theoretic perspectives.

Analytical Techniques

This study adopts a mix of techniques often used in qualitative analyses to sift through information in field notes and transcripts from interviews. These techniques include categorization, content analysis, stakeholder analysis, within-case analysis, cross-case analysis, and pattern-matching.

The use of these techniques is built on a "loop" view on how variables influence each other, which requires cycling back and forth between variables and processes and in turn allows for the emergence of not only stories but also underlying variables and how they connect over time in their unique situations. Therefore, the outcome of using these techniques is the identification of what Weick (1979) names "cause maps," which retain the inherent complexity of processes and causal mechanisms--not just association. In addition, the purposes of using these techniques is to approach the flow of events in their

own contexts, sorting out the temporal dimension of events, reducing a large amount of data, and making sure results are systematic and verifiable.

Additionally, to facilitate the search for patterns, I adopted contextualizing strategies, such as narrative analysis and discourse analysis. These strategies were used to extract factors associated with the variables in the aforementioned analytical framework, but they were examined in locally unique settings, thereby facilitating the discovery of causal networks. Moreover, I use case dynamics and explanatory effects matrices to explore preliminary explanations with a set of factors for change and their consequential processes and outcomes. Through examining each of the diverse set of settings included in the sample for this study, the researcher approach "thorough local acquaintance" that Cambell (1986) calls for to enhance the validity of findings.

The implementation of these analytical techniques and strategies involves several phases, the first two of which overlap the development of the analytical framework as just discussed in the last sub-section. First, through immersing myself in data, I gained some sense about how different informants' response fit together and how they differ. In this phase, I used open coding to associate the responses from interviews with conceptual categories (Strauss and Corbin, 1990). This categorization procedure gauges the range and dimensions of responses from the open-ended questions asked during the interviews. Some responses were not expected. For example, the local organization that an informant mentioned to have requested the program to offer IT-related courses for its employees to enroll as certificate students in the program was not one of the stakeholder groups I had anticipated.

With the categories from the first phase, I entered the second phase of data analysis.

I copied texts from field notes or original quotes from transcripts that fit each category. Using a word processing package's search function, I double checked to make sure there was exhaustive presentation of all relevant information from informants. In the mean time, I used the "outline" viewing mode in Microsoft Word to systematically structure the categories from the first phase. Through meticulously sifting field notes and narratives through different layers of categories organized by stakeholders and other families of codes that gradually emerged during this phase, patterns and causal connections as well as the temporal order, if applicable, of these categories arose, and the analytical framework become more stable.

The third phase was a mix of drawing preliminary conclusions and verification of them. In this phase, I continued to modify the categories and reshuffle the way they are structured within Word under the outline mode. Using this viewing mode, I was able to easily change and maneuver the structure or elements of the outline, which embodied the analytical framework used to sort and organize data. Moreover, stakeholder analysis, content analysis, discourse analysis, within-case analysis, cross-case analysis, and pattern-matching brought about more patterns and connections.

During the write-up process, I saved the analysis as new files often as a way to keep a log for the evolution of the analysis. Sometimes I returned to earlier versions of analysis to retrieve the fresh insights not long after data collection. During the entire analysis phase, I also returned often to the original transcripts or field notes to retrieve the complete contextual information of informants' narratives to best interpret the data.

Record Keeping and Results Reporting

There are two major issues related to result reporting that are worth mentioning: protecting the confidentiality of informants' identities and non-equal representation of informants, the former of which also involves record keeping measures. Below I discuss each of these two issues.

To adhere to my agreement with informants and the requirements about using human subjects for this study, I adopt the following measures in keeping the interview records and reporting the results so that informants' identities were strictly kept confidential and anonymous.

First, in the transcripts and field notes of the interviews, as well as in this dissertation, informants are coded as "S1," "S2," "S3," …. through "S14."[12] Not only informants' names and positions are kept confidential, but also all the other information that could possibly reveal informants' identities (e.g., departmental affiliation; school, university, or research center they work for; colleagues' names; and the number or title of courses offered by the program), which is separated from the main text of the transcript and kept in a separate file. All the files are kept in password-protected storage devices, to which only I have access. The hard copies of the transcripts, background information for the interviews, tapes of the recorded interviews, and other materials that could reveal informants' identities are kept in a secure place that only I can access.

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[12] The linkage between the real identities of these informants and their codes is kept in a separate electronic file from the transcript files.

Second, chapters 6 to 9 in this dissertation contain neither the name nor profiling of any of the eight programs with which the interviewed informants are associated. It is a difficult decision, because giving a profile of each case would have been necessary for doing eight thorough case studies. However, to minimize the risk of revealing informants' identities, I decided to withhold this information. To mitigate the loss of seeing a deep and textured picture of each case, the analysis tries to compare across cases where possible in ways that would help illuminate the complicated connections between different factors and their contexts.

Third, five programs have more than one informant who accepted my interview request, but these informants do not know if there are other colleagues from their programs who were also interviewed. In chapters 6 to 9, I avoid disclosing which informants are from the same program. In case more than one informant from the same program expressed the same opinion or a similar observation, I only selected one to report to avoid misleading readers into thinking informants from more programs shared the same feature than the actual number of programs there are.

Fourth, disguising informants' gender in the report is another effort to protect their identities from being made known to either their colleagues who were also interviewed or the wider public. Unless it seems too awkward, the reporting tries to maintain gender neutrality. In only limited instances where I refer to the informant as male, it may or may not reflect the reality, because there are both male and female informants.

With all the efforts that were taken to protect the identities of informants, very careful readers who are cognizant of MPA programs' features may still be able to guess with varied degrees of certainty which programs might be in the sample, or who might

have been interviewed. I believe I adopted all the measures I could think of in this study for the confidentiality and anonymity concerns, at the same time trying to maintain the integrity of this research project.

Summary

This dissertation contains two empirical studies. The first study attempts to fill in a gap in the IT literature in PA by explaining the different degrees of ITM curricular development across MPA programs. This study is based on a theoretically sound model and credible statistical analysis. Additionally, by testing hypotheses linked to resource dependence theory and institutional theory, this study also provides an empirical assessment of the utility of these theories in explaining organizational change. In short, the results should have broad relevance--both to the IT literature in PA, and to resource dependence theory and institutional theory in the PA literature.

The second empirical study complements the first one by assessing interview-based narratives from people who have been involved in their own program's IT-related curriculum decision making. Their rich delineations illuminate associations examined and not examined in the first empirical study, thereby offering a more complete picture about the driving forces, processes, and their contexts regarding IT-related curriculum development in MPA programs. Moreover, this study also discuses some of the aspects of curricular development that the first empirical study could not assess, for example, the ways in which IT-related components have been integrated into courses, and whether there are in-house or outside faculty teaching IT-related courses.

In the following chapters I turn to the results of the two empirical studies. Chapter 5 reports the results from the first empirical study, while the next four chapters discuss those of the second. As noted previously, chapters 6 to 9 are organized by the theories on which the analyses therein are based--focusing on the informants' narratives and perspectives as seen through the lens of resource dependence theory, institutional theory, garbage can theory, and diffusion theory, respectively.

Table 4-1: Variables, Theories, and Hypotheses

	Explanatory Variable	Theory	Hypothesis
1	Faculty size	Resource Dependence	The greater the number of faculty members, the greater the degree of ITM curricular development within the MPA program.
2	Whether or not the MPA program is affiliated with a PA school	Resource Dependence	MPA programs housed in a school of public administration/affairs/management/policy provide more advanced ITM education than MPA programs that are part of another school.
3	Availability of other IT-related schools/departments	Resource Dependence	MPA programs that have other IT-related schools or departments on campus provide less or more advanced ITM curriculum than MPA programs that do not.
4	Overall MPA ranking	Institutional Theory	The higher the program's overall ranking, the greater the degree of ITM curricular development within the MPA program.
5	Accreditation status	Institutional Theory	If the program is accredited, then it has a higher degree of ITM curricular development.

Table 4-2: Breakdown of Informants' Positions

Position	Number of Informants
MPA Faculty Member (with a research or teaching interest in ITM)	5
MPA Program Director (current or past)	6
Chair Person of the Department that houses the MPA Program	2
Deputy Dean of the School that houses the MPA Program	1
Faculty Member from a non-MPA program that offers Course(s) for the MPA program at the same university	1
Chair Person of a non-MPA program that offers Course(s) for the MPA program at the same university	1
Total	16

Note: The total number of informants does not add up to 14, because two informants double as an MPA faculty member and the program director.

Figure 4-1: The Design of the Interview Protocol: A Process-based Model

Motivation, Perceptions & Goals	Decision-Making Environment			Dimensions of IT-related Curricular Adaptation	Assessment
▪ Motivations behind offering each IT-related curricular component ▪ Incoming students' IT-related literacy ▪ Expectations about graduates' IT-related capacity ▪ Development strategy of program ▪ Assessment of IT-related curricular trends		*Internal*	*External*	▪ Is there any IT-related course in the core curriculum? ▪ Is there any IT-related concentration? ▪ What are the IT-related elective courses? Are they taught by in-house or outside faculty members? ▪ How are IT-related topics integrated into courses?	▪Have there been any assessments on the ITM curriculum? ▪Have the goals behind the adaptation been achieved?
	Resources	▪ Participants & their preferences ▪ Faculty size & specialties ▪ Directors (current & past)	▪ Other same-campus programs offering IT-related courses		
	Institutions	▪ Credit hours (total & core) ▪ Departmental affiliation	▪ NASPAA ▪ USNWR ▪ Other MPA programs		

→ (between first and second) → (between second and third) → (between third and fourth)

CHAPTER FIVE
THE CONNECTION BETWEEN ITM CURRICULAR ADOPTION
AND MPA PROGRAM FEATURES--ANALYSIS AND RESULTS

This dissertation research conducts two empirical studies to explain why the degree of IT-related curricular development differs among MPA programs. This chapter reports the analysis and results of the first study, which aims to elucidate the degree of ITM curricular development based on explanatory variables suggested from institutional theory and resource dependence theory. The design of this empirical study was detailed in the first section of chapter 4.

To address the question of why the degree of ITM curricular development differs among MPA programs, the dependent variable is operationalized using two outcome measures that capture distinctive aspects of the term "ITM curricular development". The first is whether or not there is an ITM concentration in the MPA program. Since this is a binary variable, a standard probit model is used for the estimation and analysis.

The second outcome measure represents the degree to which ITM curriculum is required in the MPA program. The ratio of required ITM credit hours to the total degree hours for each individual program is the empirical measure used for this variable in the study.[13] Because this variable is continuous above the zero threshold level at which programs begin to offer core ITM curriculum, a corner-solution Tobit model is the

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[13] The ratio form of the variable was used because credit hours across programs are not directly commensurable due to programmatic differences in the amount of curriculum a credit hour represents.

statistical model used for the estimation and analysis.

The remainder of this chapter is organized as follows. The following section overviews the status of ITM curricular development in MPA programs based on a data summary and descriptive assessment. The next section provides the probit analysis of the factors affecting whether a program will offer an ITM concentration, followed by another section that presents and discusses the statistical analysis of ITM core curriculum development using the Tobit model. The final section provides an interpretive discussion of the empirical results and offers some concluding thoughts.

Overview of Current ITM Curricula

The purpose of this section is to provide a general overview of the status of ITM curricular development in MPA programs in the United States using the data collected from the 187 programs included in the study. This overview should help the reader to gain a better sense of the data, and to develop an informed perspective that should be helpful to understanding the results of the subsequent statistical analyses.

The descriptive statistics and correlation matrix for the variables used in the statistical analysis are presented in Tables 5-1 and 5-2, respectively. Turning first to the dependent variables, CONCENTRATION is a zero-one dummy variable that indicates whether or not an MPA program has an ITM concentration, and RATIO represents the fraction of an MPA program's required ITM credits to total degree hours. Table 5-1 shows that 16% of the programs (n=30) offer an IT management concentration. Close to 14% of the programs (n=26) offer some ITM curriculum in their cores; of those that do, the fraction of core curriculum dedicated to ITM to the total curriculum ranges between

1.92% and 11.11%. The mean for the whole data set/sample, including both programs which offer core ITM curriculum, and those that do not, is 0.96% (see Table 5-1).

Insert Table 5-1 about here

Insert Table 5-2 about here

Turning to the explanatory variables, Table 5-1 shows that MPA programs on average have 14.5 full-time faculty members, and the faculty size ranges from 2 to 51 (see the "FACULTY" variable in the table). Additionally, among the 187 programs in the data set, sixty-five percent (n=121) have information science or informatics or other programs on the same campus that provide MPA students with alternative sources for ITM courses (see the "OTHER" variable). Eighty-three percent (n=155) of the programs are NASPAA-accredited ("ACCREDIT"). Forty-eight percent (n=89) of the programs are affiliated to a PA school ("SCHOOL"), while other programs are part of other schools or colleges.[14]

As explained in the first section of chapter 4, 52 programs in the data set are considered to be on the USNWR's top-50 public affairs master's programs; the rest of the programs in the data set are unranked. Three coding strategies are used to represent this pattern of rankings. In the first two, the actual ranking is used for the ranked programs,

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[14]   Other schools include schools of management, schools of social policy and management, schools of international and public affairs, schools of education and social policy, colleges of arts and sciences, colleges of business and public administration, schools of social sciences, schools of management and urban policy, and schools of architecture and planning.

while unranked programs are represented in two alternative ways: "RANKING53" code unranked programs as "53" (the next number following the total number of ranked programs), while "RANKING120" code the unranked programs as "120" (the median between 53 and 187, the latter being the sample size). The third coding strategy represents the program ranking variable as binary ("RANKING01). This variable takes a "1" for ranked programs and "0" for unranked programs. These alternative coding approaches yield different descriptive statistics in Table 5-1, but the differences are a reflection just of the coding approach, rather than anything substantive.

Tables 5-3 and 5-4 show some other data patterns of interest. Less than three percent of the programs (2.67%, n = 5) have both an ITM concentration and at least one dedicated ITM course in the core courses (Table 5-3).[15] This minority group represents the highest degree of ITM curricular development, as in these programs, not only do interested students have the option of acquiring an ITM specialty, but all students in the program will have some level of exposure to ITM with at least a semester-long dedicated course.

Insert Table 5-3 about here

As mentioned, above 16% of programs (n=30) include ITM as one of their concentrations, and close to 14% of the programs (n=26) require at least one ITM

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[15] These five programs are: Master of Public Management at Carnegie Mellon University, Master of Public Policy at George Mason University, Master of Public Administration at North Carolina State University, Master of Public Administration at Pennsylvania State University Harrisburg, and Master of Business Administration at Willamette University.

course.[16] Some of the thirty programs that explicitly offer ITM as one of their concentration areas have in-house faculty members to teach courses in this area, while the others rely on instructors from other academic programs on campus or part-time faculty members to teach these courses.

Close to 73% of programs (n=136) have neither an ITM concentration, nor a dedicated ITM course in the core, even though some of them list in their curricula or course offerings some elective ITM courses for students interested in the area.[17] This group of programs represents the majority of programs, and occupies the lower-level on the spectrum of ITM curricular development. However, some of them are highly ranked. In fact, among the 52 top-ranked MPA programs, 30 of them belong to this group, and 5 of the 12 MPA programs whose ITM are ranked top-10 are in this group, too.

Table 5-4 shows that programs explicitly offering an ITM concentration have an average full-time faculty size of 20.3, which is larger than that of the programs that do not offer such a concentration (13.34). As noted before, the average faculty size among all 187 programs is 14.5. Programs that require at least one ITM course also have a larger average faculty size than those that do not (17.2 vs. 14.0). On the other hand, the average number of credit hours for completing the degree for each group does not show a very clear difference.

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[16]   The definition of "ITM" in this study excludes courses on introductory computing and software applications. For complete lists of ITM concentrations and required ITM courses considered in this study, see Tables 5-5 and 5-6, respectively.

[17]   These electives may or may not be offered within the MPA program.

Insert Table 5-4 about here

Table 5-5 lists the courses offered in the 26 programs that have at least one ITM course in their core curricula. The majority of these courses show a clear departure from early stages of IT curricular development where only introductory computing or software application courses were likely to be included in the core, if any IT components were to appear in the core at all.[18] In contrast, the current data show that the ITM courses in twenty-six MPA programs' core curricula center on Management Information Systems, while a few required courses address broader issues, such as the organizational and cultural implications of IT. This development may be a response to improved IT skills shared by average entering MPA students, higher awareness among MPA faculties or program decision makers about the implications of IT development for PA, more resources available for MPA programs to incorporate non-traditional areas into their curricula, higher institutional pressure, or some combination of these factors and possibly other factors.

Insert Table 5-5 about here

A survey of the ITM concentrations that are actually offered (Table 5-6) reveals that they, like the required ITM courses, have different orientations and emphases. Some appear to focus on the managerial aspect of IT; some stress IT's policy implications; some seem a mix of both; and some seem to be an introductory overview of IT in general

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[18] See Kraemer et al., 1986 for a brief review of research done in the early 1980s on the state of computing education in MPA programs.

and its implications for PA. Collectively, these areas respond to the calls from the literature regarding the skills and knowledge the field of PA should equip future public managers with. Moreover, these areas also reflect a general trend discussed in the second section of chapter 3--that is, the evolution from early stages of IT curricular development in MPA programs in which the main IT components in the curriculum revolved around rudimentary IT appreciation and software applications. For example, seventeen programs now include information systems management as one of their concentrations; ten programs have science and technology policy on their concentrations lists; two programs' ITM-related concentrations' titles touch upon the international aspect of communications policy; and three programs have e-government, digital government, and e-governance, respectively, as their ITM-related concentrations.

Insert Table 5-6 about here

The partial relationships between the dependent variable "whether an ITM concentration is offered" and five explanatory variables are displayed in Table 5-7. First, regarding the variable "faculty size, of the 101 programs that have a faculty size smaller than the median size of 11, only 8.8% (n = 9) of the programs have an ITM concentration. In contrast, 25.9% (n = 22) of the programs with a faculty size larger than the median have the concentration. This result is consistent with the hypothesis for the "FACULTY" variable in terms of a positive effect of this variable on the probability of having an ITM concentration.

Insert Table 5-7 about here

The affiliation of a program with a School also appears to have the hypothesized

positive relationship to the presence of an ITM concentration. 21.4% of the programs (n=15) housed in a PA school offer an ITM concentration, while 12.8% of programs (n=15) in other schools or colleges offer such a concentration.

The study hypothesizes that MPA programs having other academic units on the same campus that offer ITM courses may affect the likelihood of the program to offer an ITM concentration. The data do not show a determinative trend one way or the other. 17.3% of the programs that have at least another academic unit on the same campus delivering IT courses offer an ITM concentration, while only 13.3% of the programs without other alternative sources for students to take IT courses offer an ITM concentration.

Table 5-7 also shows the relationship between MPA program rankings and the provision of an ITM concentration. Among all top-50 ranked programs, 30.8% of them (n=16) have an ITM concentration, while only 10.4% of non-top ranked programs (n=14) offer such a concentration. Thus, the positive effect of overall MPA rankings on ITM concentration offering holds up in this partial relationship, as hypothesized.

Regarding the relationship between accreditation status and ITM concentration offering, accredited programs appear to have a slightly higher likelihood of offering the concentration than unaccredited programs, but the difference is small (16.1% vs. 15.6%). The analysis in the following section will show a more definitive connection between these two variables.

The data patterns described above are only suggestive, offering interesting descriptive information about the ITM curricula observed across the sample of MPA programs in the study. The next two sections turn to rigorous statistical analyses that

attempt to explain how the dependent variables covary with the explanatory variables one at a time, holding constant the levels of the other explanatory variables. While such analyses are by their very nature identifying statistical associations, the theoretical motivation for the variables in the previous chapter (see Table 4-1) provides the conceptual justification for attributing causality to the associations that turns out to be statistically significant. It is always worth remembering, however, that the validity of the causal interpretations attributed to statistical associations depends on the validity of the assumptions and theory which motivate them.

Explaining the Offering of ITM Concentrations

This section uses a probit model to estimate the probability that a program will offer an ITM concentration as a function of the explanatory variables mentioned in the previous section. There are various ways to interpret a probit model. Generally, it is assumed that there is an unobserved "latent variable" y* that is linearly related to the observed explanatory variables x's as follows:

$$y_i^* = x_i \beta + \varepsilon_i$$

where ε is the error term, assumed to be normally disturbed, with Var(ε|x)=1. In the case of this study, the latent variable might be taken to be something like "the propensity to offer a required IT management concentration". The observed binary variable y--in this case, the presence or absence of an ITM concentration--is associated with the latent variable y* by the following measurement equation:

$$y_i = \begin{cases} 1 \\ 0 \end{cases} \quad \text{if} \quad \begin{matrix} y_i^* > \tau \\ y_i^* \leq \tau \end{matrix}$$

That is, if the value of the latent variable is greater than the threshold τ, then the observed y takes on the value of one, otherwise it is zero (Long 1997). In the context of this study, if the unobserved propensity to offer an IT management concentration exceeds a threshold, the program offers the concentration.

Table 5-8 reports results for the probit analysis. The only difference among the models indicated is the coding of the program ranking variable (discussed in the previous section). The results are consistent across models in terms of the variables that are significant and their significance level, as well as the signs of the partial effects of each independent variable on the response probability, and the goodness of fit for each model. Because the models are essentially the same and give consistent results, I will use just one of them in the analysis and discussion that follows.

Insert Table 5-8 about here

Table 5-9 shows that both faculty size and ranking have statistically significant and positive influence on the probability of having an ITM concentration (p<.05, one-tailed test for both variables). Note that the negative sign for the coefficient estimate for the ranking variable reflects the fact that there is an inverse relationship between a program's ranking and its numerical index--the best program out of 187, for example, gets a "1" rather than "187" to indicate its position. Thus, the negative sign shows that the probability of having an ITM concentration decreases as its ranking decreases, for example, moves from 1 to higher numbers (goes from best to less good). In short, the results indicate that, other things being equal, the larger the faculty size, or the higher the ranking of the MPA program, the more likely the program is predicted to offer an ITM concentration. These results are consistent with hypotheses stated earlier which are

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derived from resource dependent theory and institutional theory. Larger faculty sizes are consistent with greater resources. And for institutional theorists, the relationship between curricular offering and high ranking would be consistent with institutional conformity among the better schools. These results are also consistent with the less formal data relationships previously shown in Table 5-7.

Insert Table 5-9 about here

The rigorous evidence test offered in the probit model yields inconclusive results with the previous data patterns observed in other cases. The probit results do not reveal a statistically significant relationship between the provision of an ITM concentration within the MPA program and any of the following: whether an MPA program is part of a PA school, whether there is any other academic unit on the same campus that provides an alternative source for MPA students to take ITM courses, or whether or not the program is accredited. The lack of discernable statistical relationship for these variables may be partly due to low variation in the sample, for example, 83% of the programs in the sample are accredited, and 68% of programs have at least another academic unit on the same campus that offers ITM courses. It may also be due to multicollinearity, for example, whether the program is housed in a PA school has some degree of correlation (0.283, see Table 5-2) with faculty size. Or, it might have something to do with the fact the explanatory variables may be relatively poor proxies for the attributes they intend to measure, for example, having at least one other academic unit on campus that offers ITM course could represent widely varying levels of alternative options for ITM study. In the latter case, it is also possible that the possible complementary and substitute relationships between ITM offerings in the MPA program and other campus units hypothesized earlier

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might both be present in the sample, with the effect of canceling each other out at the level of the total sample. Finally, it is also possible that the hypothesized relationships simply do not hold. Better data would be necessary to evaluate which of the several explanations just given best describes the reality.

Given the nonlinearity of the probit model, its coefficient estimates do not provide the partial effect of the independent variable on the outcome measure as in the standard linear regression model. To assess the magnitude of the associations between the significant independent variables and the dependent variable, I use the methods suggested by Long (1997 and 2001).

For example, for a program that is average on all characteristics (i.e., holding all variables at their mean), having one additional faculty member (i.e., changing from 14.45 to 15.45 faculty members) on average increases the predicted probability of having an ITM concentration by 0.48%. And, the predicted probability of having an ITM concentration changes from 9.24% to 38.4% when faculty size varies from its minimum value (2) to its maximum value (51) and all other variables are held at their mean, for a total effect of probability change of 29.16%. Also for a program that is average for all characteristics, being ranked one place higher (i.e., going from the 45th to the 44th place) boosts the predicted probability of offering an ITM concentration by 0.35%. The predicted probability of having an ITM concentration ranges from 11.58% to 35.06% when ranking goes from the lowest (i.e., the maximum value of this variable, 53, which indicates that a program is outside of the top-50 list) to the highest (1st place) when other variables are held at their mean, so the total effect of this ranking variable on the probability change is 23.48%. A standard deviation change in faculty size centered

around the mean[19] will increase the probability of having an ITM concentration by 5.06%, holding other variables at their mean. In contrast, a standard deviation change in ranking centered around its mean[20] will decrease the predicted probability of observing an ITM concentration by 5.51%, holding other variables at their mean.

Insert Table 5-10 about here

I now use the probit model for some simulations. In this context, the empirically-derived coefficient estimates within the model's functional form are used to simulate outcomes as a function of levels of particular independent variables, while holding the remaining independent variables constant at their means. This kind of controlled experiment is commonly conducted in the literature (see Long, 2001). For example, Figure 5-1 shows the predicted probability of offering an ITM concentration as a function of varying faculty sizes and program rankings, while holding the other three explanatory variables at their means. We see a positive relationship between faculty size and the predicted probability of offering an ITM concentration, with higher ranked programs having higher such probabilities, showing a slightly higher positive response to increased faculty size, and having a wider probability range resulted from variation in faculty size. Additionally, nonlinearity is exemplified in the following examples: at faculty size of 15, the 3rd-ranked program has 4.8% more probability of offering an ITM concentration than

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[19] Since the mean of faculty size is 14.45, and the standard deviation is 10.62, as Table 5-1 shows, the actual change is from 9.14 to 19.76.

[20] Since the mean of the variable "ranking53" is 44.53, and the standard deviation is 15.57, as Table 5-1 demonstrates, the change is from 37 to 52.

the 13th-ranked program (26.5% vs. 21.7%); in contrast, the 43rd-ranked program with 15 faculty members has only 2.6% more probability than an unranked program in offering such a concentration (10.5% vs. 7.9%). Nonlinearity also exists when holding ranking constant and varying faculty size. Using the 23th ranked program as an example-- increasing faculty size from 15 to 25 raises the probability of offering an ITM concentration by 5.9% (from 17.4% to 23.3%), while increasing faculty size from 25 to 35 increases such probability by 6.9% (from 23.3% to 30.2%).[21]

Insert Figure 5-1 about here

Explaining Variations in the required ITM Credits in MPA Core Curricula

The data collected for this study show that 161 of 187 MPA programs in the United States do not require any stand-alone ITM courses in their core. For the 26 programs that do, the percentage of required ITM curriculum to total credit hours ranges from 1.92% to 11.11%. This section tries to explain this data pattern. In particular, the goal is to explain the probability that a program will require ITM courses in its core, and for those

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[21] Again it should be pointed out that Figure 5-1 is showing simulated outcomes as a function of a particular controlled experiment--varying two variables, while holding three others constant. Thus, this figure (and Figures 5-2 and 5-3, which will be introduced later) is not showing actual data. For example, there is no program in the sample with a faculty size of 5 which is ranked number 3. In this case, the interpretation that is consistent with Figure 5-1 would be: "if there was a program with a faculty size of 5 which was ranked number 3, the model would predict it would have a 20.1% probability of offering an ITM concentration."

programs which do require an ITM course in the core curriculum, to explain the variation in the amount of ITM credits they require.

It is a challenge to develop a model to explain a dependent variable that takes on the value of zero for many values but beyond the zero thresholds varies continuously, as does the variable RATIO used in this study to represent required ITM credit hours. If we describe the variable as dichotomous, treating all programs requiring at least one ITM course as the same, then we lose information about the differences among such programs, even though we could assess reasonably well the first question of interest--the probability that a program would require ITM in its core--using a probit model.

On the other hand, we could truncate the sample, discarding all cases that do not have any required ITM courses, and simply try to explain the variation among the 26 program that do--using a standard OLS regression model. Beyond losing the information, and not being able to assess the probability that programs would require ITM curriculum, the estimation results from the truncated sample will be biased and inconsistent (Dow & Norton 2003; Wooldridge 2002: 518).

In the statistics literature, the aforementioned actual zero outcomes are referred to as a "corner solution" (Dow & Norton 2003; Wooldridge 2002: 518), reflecting the fact that they are not accidental, but rather, the outcome of an explicit choice process. It is an important distinction for the model formulation and interpretation that the zero values are actually observed as a consequence of a choice--many MPA programs choose not to require ITM curriculum in their cores--rather than being the result of missing or negative

values.[22] The appropriate model for this context is the so-called "corner-solution Tobit model." It is one of the models under the umbrella of the standard censored Tobit models, also know as the censored regression models (Wooldridge 2002: 518).[23]

The corner-solution Tobit model uses an artificial construct of a latent variable, y*, which is not observed and in this context. As part of a utility maximization problem, the decision maker chooses a value for y*. The actual outcome variable y is the actual variable of interest is y, which is the observed credits of ITM course that is required in the core curriculum divided by the total degree hours as a way to standardize y across programs which have a wide range of degree hours. The value of y will be zero if y* is negative or zero, and equal to y* above zero. The empirical model's structure can be described as follows:

$$y_i^* = x_i\beta + \mu_i \qquad \mu_i \,|\, x_i \sim N\,(0,\sigma^2)$$
$$x_i \quad 1 \times k \;\; \text{vector}$$
$$\beta \quad k \times 1 \;\; \text{vector}$$

$$y_i = \max(0, y_i^*) \hspace{6cm} \text{5.3a}$$

I now turn to the results of the empirical model. All of the independent variables

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are the same as discussed for the probit model in the previous section, and Tobit Model 1, Tobit Model 2, and Tobit Model 3 in Table 5-11 parallel probit models 1-3, that is, just reflect the different codings of the program ranking variable.

Insert Table 5-11 about here

As in the probit model results in the second section of this chapter, faculty size demonstrates statistically significant and positive influence on the RATIO variable (Table 5-11; $p<0.05$, one-tailed test). But unlike the probit models, the ranking variable does not turn out to be significant in the Tobit models. Instead, whether programs are accredited appear to significantly influence the percentage of ITM credit hours required in core curriculum ($p<0.1$ in Tobit 1 and 2, and $p<0.05$ in Tobit 3; all one-tailed tests).

Just for comparison purposes, I redid this analysis using an ordinary least squares (OLS) regression, relating the RATIO variable to the independent variables on the same sample. The results are in Table 5-12. It is interesting that the results are so similar to the Tobit estimation; in particular, the same variables that are significant, and the coefficient estimates have the same signs and similar statistical significance. The only exception is the ranking variable, which have different signs in the OLS and Tobit models. Because neither coefficient is significantly different than zero, the sign difference can be attributed to statistical noise.

As mentioned before, the Tobit estimates are superior in a statistical sense, but the consistency across methods still is interesting and suggestive of robust results.

Insert Table 5-12 about here

If we convert the RATIO variable to a binary variable[24] and use probit procedures to estimate the same set of explanatory variables' association with this newly-created binary dependent variable "REQUIRED01," faculty size and accreditation status still demonstrate significant results and have the same sign of coefficient estimates as their counterparts in the aforementioned Tobit and OLS models (Table 5-13). In this case, the estimation is explicitly describing the probability that a program will require ITM courses in their core.

Insert Table 5-13 about here

As mentioned before, a problem with the probit specification in this context is the loss of information when the dependent variable is collapsed from a continuous variable into a simple proxy variable to indicate when a program has some ITM required course(s). But again, the consistency across methods is reassuring, suggesting that the overall conclusions are likely to be robust.

Because of the methodology issues with the OLS and probit models in this modeling context, they will not be further considered here. Instead, I will select "Tobit 2" results as the basis for further analysis. The full results from estimating this model using Stata are presented in Table 5-14.

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[24] Programs requiring no ITM course are coded "0" and the other programs are coded "1" for this binary variable.

Table 5-14 about here

The result shows that the model's overall goodness of fit has a 0.088 value for McKelvey & Zavoina's R^2, which is considered to be closest to the conventional OLS-R^2, compared to other pseudo-R^2 measures (Veal & Zimmermann 1996). The large fraction of zero values (161 out of 187 observations) may be one of the reasons explaining this pseudo-R^2 value. Additionally, there are only five explanatory variables in the model; more explanatory variables would often raise the pseudo-R^2 value. Additional specification work should be conducted in future research to explore plausible variables that could be added to the model to better predict the dependent variable, RATIO.

Faculty size and accreditation status have statistically significant effects on the percentage of required ITM credit hours in the MPA curriculum, and their signs are as expected--a larger faculty size predicts a higher value of the outcome variable; likewise, programs accredited by NASPAA on average offer more required ITM credits than those programs which are not accredited. However, the coefficient estimates in Table 5-14 (and the other two Tobit models in Table 5-11) indicate the effects of the explanatory variables on the latent variable y*, not y. Since y* is not observed, these coefficients estimates are usually not of direct interest for corner solution models (Wooldridge 2002: 520). Essentially, two major quantities of interest are P(y>0|x) and E(y|x).

Technically speaking, P(y>0|x) is the probability that the value y is greater than zero given x. Applying this probability concept to this study, we obtain the probability that the required ITM hours divided by total degree hours is greater than zero given x. In other words, it is the likelihood that a program requires any ITM course given the levels

of the dependent variables. This is of interest because only 26 programs now have required ITM course(s), and this probability informs us of the association between certain institutional or resource factors and the probability of having a required ITM course. (This is the conceptually-equivalent outcome measure to that produced by the probit model).

To derive this probability, I first conduct the standard Tobit estimation procedure, and then use the "mfx" command in Stata. The results show that programs are expected to have a 13.47% likelihood of dedicated ITM course in the core, when holding all explanatory variables at their mean. This probability is a bit higher than, but reasonably close to, the 12.83% probability predicted from "probit_required 2" model in Table 5-13. This similarity is not surprising.

Also using the "mfx" command with specified values for faculty size and accreditation status while holding all other variables at their mean, the corresponding discrete change in $P(y>0|x)$ are presented in Figure 5-2, which shows that as faculty size increases from 5 to 51 and other variables are held at their mean, non-accredited programs on average are expected to change from 3.1% to 22.87% in their probability of having any ITM course in their core curriculum, while accredited programs have higher probability of having such courses (the change goes from 11.02% to 45.9%).

Insert Figure 5-2 about here

Additionally, partial effects resulted from faculty size change are not constant, both for accredited and non-accredit programs. For non-accredited programs, faculty size change from 5 to 15, 15 to 25, 25 to 35, 35 to 45, and 45 to 51 increases the probability of having required ITM course(s) by 2.14%, 3.17%, 4.43%, 5.84%, and 4.19%, respectively.

For accredited programs, the corresponding partial effects are 5.30%, 6.73%, 8.05%, 9.07%, and 5.75%, respectively. Other things being equal, the larger the faculty size, the more obvious the effects are on increasing the probability of including an ITM course in the core. Moreover, other things being equal, accredited programs on average have higher magnitudes of probability change responding to the same faculty size change than non-accredited programs.

Turning from the expected probability of having a positive RATIO to the expected value of RATIO if it is positive, of the three main conditional expectations usually of interest in the Tobit model,[25] the one this study is most interested in is the unconditional effects of the observed variable, given by:

$$E(y|x) = P(y=0|x) \cdot 0 + P(y>0|x) \cdot E(y|x, y>0) = P(y>0|x) \cdot E(y|x, y>0) \qquad 5.3b$$

5.3b demonstrates that to obtain $E(y|x)$, we need two pieces of information: the aforementioned probability of the dependent variable RATIO being greater than zero and $E(y|x, y>0)$, the latter of which being the expected value of RATIO given x and RATIO being above zero. If we are concerned with the determinants of RATIO for programs that have non-zero values for RATIO, then $E(y|x, y>0)$ is of interest. However, if we are not only concerned about programs that have required ITM course(s), but also those programs that do not in their core curricula, then $E(y|x)$ cover the complete picture with

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[25] Another conditional expectation is $E(y^*|x)$, the conditional expectation of the underlying latent variable y^*. y^* indicates the propensity of requiring ITM courses, and is not observed. The other one is $E(y|x, y>0)$, which is part of the function for deriving $E(y|x)$.

both.

Holding all explanatory variables at their mean, we can obtain the result of 0.76% for the predicted value of $E(y|x)$. A substantive interpretation of this 0.76% value for $E(y|x)$ is that an average MPA program is expected to have 0.76% of required ITM credits in its entire curriculum. Because MPA programs on average require 43.59 credits (see Table 5-1) for completing the degree, this 0.76% is translated into 0.33 credit, which seems a very small number.

Two explanations account for this small expected value for $E(y|x)$. First, since the data are such that the distribution of RATIO clusters at the mass point zero, most of the effects of changes in the explanatory variables are not expected to be large enough to move the *latent* variable beyond the mass point, thereby having very limited effect on the *observed* mean. The predicted value of 0.76% for $E(y|x)$ from results is consistent with this expectation. Moreover, recall equation 5.3b, which shows $E(y|x)$ is the product of $E(y|x, y>0)$ multiplied by $P(y>0|x)$. With the average expected probability of $P(y>0|x)$ less than 14%, it is reasonable to expect a low $E(y|x)$.

Equation 5.3c informs us conceptually how $E(y|x)$ changes with changes in the x's. Using the chain rule on 5.3b, we can derive the partial effects for $E(y|x)$ with respect to x. The right hand side of equation 5.3c can be decomposed into two parts: the part before the "+" sign indicates the change in the probability of being above zero, weighted by the expected value of y if above; the other part is the change in y of those above zero, weighted by the probability of being above zero (McDonald & Moffitt 1980; Wooldridge 2002).

$$\frac{\partial E(y/x)}{\partial x_j} = \frac{\partial P(y>0/x)}{\partial x_j} E(y/x, y>0) + P(y>0/x)\frac{\partial E(y/x, y>0)}{\partial x_j} \qquad \text{5.3c}$$

Figure 5-3 shows that accredited programs on average have a steeper slop than non-accredit programs in response to the same faculty size change, and accredited programs also have a wider range in expected average percentage of their RATIO values given the same faculty size change, holding all other explanatory variables at their mean. Compared to non-accredited programs, accredited programs on average have larger magnitudes of change in RATIO resulted from the same degree of faculty size changes. Moreover, the discrete changes are not constant--the larger the faculty size, the more the discrete change. Additionally, when faculty size increase is fixed at 10, the more the base faculty size, the larger the discrete change, and this is true for both accredited and non-accredited programs. In other words, programs already with larger faculty size have higher percentage of RATIO change as a result of expanding faculty size, other things being equal. Likewise, accredited programs also react to faculty expansion with higher magnitudes than unaccredited programs, holding other variables constant.

Insert Figure 5-3 about here

Discussion

This chapter uses empirical evidence from 187 MPA programs in the United States to assess the state of their ITM curricular development and explain the gap between programs. ITM curricular development is measured in two ways: whether the MPA program offers an ITM concentration, and the degree to which ITM is required in a

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program's core curriculum as a stand-alone course

The current data show that the number of MPA programs offering ITM or a related field as one of their concentrations has increased, and so has the number of dedicated ITM courses in MPA core course listings. Prior to 1990, no ITM or IT concentration is reported to be offered by any MPA programs (Cleary, 1990). ITM courses began to see an increased presence in the late 1990s. As of 2006, the date of my data set, 16% of programs have had ITM concentration offerings, and 14% of programs have had a stand-alone ITM course in their core curriculum, showing substantial, but by no means complete, penetration into MPA curricula. The movement is still evolving and it remains to be seen how this evolution will impact MPA curricula.

The combined empirical results from the second and third sections of this chapter selectively support three of the hypotheses proposed in the first section of chapter 4, which link program features to the level of ITM curricula. Namely, faculty size, overall program ranking, and accreditation status are shown to be important in explaining ITM curricular development in MPA programs. Among factors in the probit model in the second section that might impact whether or not a program offers an ITM concentration, faculty size and ranking are significant, with both being positively associated with ITM concentration offering. On the other hand, faculty size and accreditation status positively affect the degree to which programs require ITM curricular in their cores. Greater faculty size increases the expected ratio of required ITM courses to total program degree hours, holding all other variables constant. Likewise, NASPAA accreditation is associated with a greater degree of core ITM requirements. Such findings are consistent with Cleary's earlier finding about the association between accreditation status and IT curriculum.

Faculty size is the only explanatory variable in this study that appears to significantly influence both whether there is an ITM concentration and the percentage of required ITM credits in total credit hours for the degree. The significance of this variable suggests that it is important to control for it in studying ITM curricula in MPA programs.

Turning to other variables, whether a program is part of a PA school (SCHOOL) is not significant for explaining whether a program offers an ITM concentration or the variation in the RATIO variable. In other words, the study finds no evidence to support a proposition that PA schools are leading the edge in ITM curricular development; MPA programs housed in other schools or colleges[26] may be offering similar, if not more advanced, ITM curricula. If this result was to hold up with additional information and research, several questions would be relevant: Are MPA programs in general doing enough in their quantity and quality of ITM courses? Will ITM curriculum continue to be established in the MPA curricular environment?

Another variable derived from resource dependence theory is the existence of another academic unit on the same campus that offers ITM courses (OTHER). Like SCHOOL, this variable does not seem significant in predicting ITM curricular variations--in either the probit or Tobit models. Given the measurement issues with this variable and its possible contradictory effects on MPA curriculum--enhances as a complement, or diverting as a substitute--more research will be needed to derive a clear understanding of

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[26] For example, school of management, school for social policy and management, school of international and public affairs, school of education and social policy, college of arts and sciences, college of business and public administration, school of social sciences, school for management and urban policy, and school of architecture and planning.

the impact of this variable.

Each of the two institutional factors in the proposed hypotheses is supported by the data and a statistical model. Namely, the higher a program's ranking, the more likely the program offers an ITM concentration. Additionally, accredited programs tend to require more ITM curriculum on a percentage basis. Being accredited or highly ranked are signs of conformity to certain institutional rules.

Twenty years ago, NASPAA started adopting a curricular standard that had information management and computer applications listed as one of the areas of competencies. Since then, scholars have urged programs to seriously consider the influence of IT on PA and modify their curricula accordingly. In response, MPA programs have adapted their curricula with various degrees. Since NASPAA is currently revising its accreditation standards and the new standards are scheduled to be released in 2009, this study is timely for informing policy makers about the state of ITM curricular development in MPA programs, and for understanding the gaps in ITM curricular development among these programs. The next four chapters will adopt four different theoretical perspectives to look into the processes and contexts in which eight programs revise their IT-related curricula over the years. More light will be shed on exactly how factors enter their decision making equations.

Table 5-1: Summary Statistics

Variable	Variable Description	Mean	Std. Dev.	Min	Max	Variable Type
Dependent Variables						
CONCENTRATION	1 = the program offers an ITM concentration; 0 = not	0.16	0.37	0	1	Binary
RATIO	Required ITM credit hours divided by total hours for the degree	0.96%	2.48%	0*	11.11%	Continuous
Explanatory Variables						
FACULTY	Full-time faculty size in the program	14.45	10.62	2	51	Continuous
SCHOOL	1 = program housed in a PA school; 0 = not	0.37	0.49	0	1	Binary
OTHER	1 = another academic program on the same campus that offers ITM courses 0 = not	0.68	0.47	0	1	Binary
RANKING53	Ranking in top-50 MPA (unranked programs coded 53)	44.53	15.57	1	53	Ordinal
RANKING120	Ranking in top-50 MPA (unranked programs coded 120)	92.90	44.41	1	120	Ordinal
RANKING01	1 = ranked top-50 by USNWR; 0 = not	0.28	0.45	0	1	Binary
ACCREDIT	1 = accredited by NASPAA; 0 = not	0.83	0.38	0	1	Binary

Note: N=187 for all variables.

*: The minimum nonzero observation for the RATIO variable is 1.92%.

Table 5-2: Correlation Table

	CONCENTRATION	RATIO	FACULTY	SCHOOL	OTHER	RANKING53	ACCREDIT
CONCENTRATION	1						
RATIO	0.0552	1					
FACULTY	0.2414	0.1213	1				
SCHOOL	0.1135	0.0048	0.283	1			
OTHER	0.0507	0.0107	-0.0376	0.1056	1		
RANKING53	-0.2626	0.0305	-0.5014	-0.3907	-0.1123	1	
ACCREDIT	0.0052	0.0996	-0.2165	-0.0006	0.144	0.1746	1

Table 5-3: ITM Curriculum and Program Features I

		Have an ITM concentration	Do not have an ITM concentration	Sum
Require ITM course(s)	**Number of programs**	*5 (2.67%)*	*21 (11.23%)*	26 (13.90%)
	of which NASPAA-accredited	5 (2.67%)	19 (10.16%)	24 (12.83%)
	of which Top 50-ranked in PA	2 (1.07%)	6 (3.21%)	8 (4.28%)
	of which top 10-ranked for ITM	1 (0.53%)	1 (0.53%)	2 (1.07%)
Do not require any ITM course	**Number of programs**	*25 (13.37%)*	*136 (72.73%)*	161 (86.10%)
	of which NASPAA-accredited	20 (10.70%)	111 (59.36%)	131 (70.05%)
	of which Top 50-ranked in PA	14 (7.49%)	30 (16.04%)	44 (23.53%)
	of which top 10-ranked for ITM	5 (2.67%)	5 (2.67%)	10 (5.35%)
Sum	**Number of programs**	30 (16.04%)	157 (83.96%)	187 (100.0%)
	of which NASPAA-accredited	25 (13.37%)	130 (69.25%)	155 (82.89%)
	of which Top 50-ranked in PA	16 (8.56%)	36 (19.25%)	52 (27.81%)
	of which top 10-ranked for ITM	6 (3.21%)	6 (3.21%)	12 (6.42%)

Percentage figures in this table all use 187 (total number of programs in the sample) as the denominator for calculation.

Table 5-4: ITM Curriculum and Program Features II

		Have an ITM concentration	Do not have an ITM concentration	Net
Require ITM course(s)	**Number of programs**	_5_	_21_	26
	Mean faculty size	32.25	12.75	17.15
	Mean degree length (credits)	38.50	45.12	45.52
Do not require any ITM course	**Number of programs**	_25_	_136_	161
	Mean faculty size	18.52	13.18	14.01
	Mean degree length (credits)	45.04	43.07	43.37
Net	**Number of programs**	30	157	187
	Mean faculty size	20.30	13.34	14.45
	Mean degree length (credits)	44.87	43.34	43.59

Table 5-5: ITM Courses Required by 26 Programs

- Government Information Systems Administration
- Information Management & Decision Support in Public Organizations
- E-Government/Management Information Systems
- MIS for Public & Nonprofit Organizations
- Public Information Systems
- Management of Business Processes and Information Systems
- Management Systems
- Computer-Based Management Systems
- Information Systems for Managers
- Information Resource Management for Public Administration
- Information Resources Management in Health Organizations
- Managing IT in Public Organizations
- Public Information Management
- Information Management
- Introduction to Public Administration Skills--Topic: IT Management
- Computer Applications for Public Managers
- Introduction to Database Management
- Information and Communication Technologies
- Culture, Organization & Technology
- Planning, Communications, & Media

Table 5-6: ITM Concentrations Offered by 30 Programs*

- Information Technology
- Information Science & Technology
- Information Systems
- System Analysis
- Information Management
- Information Resource Management
- Information Technology Management
- Information Management & Technology
- Information Services Administration
- Technology & Information Management
- Management Information Systems
- Government Information Systems
- Public Information Management
- Information Systems Management

- E-Government
- E-Governance
- Digital Government
- Governance Systems & Policy Management
- Regional Economic Development & Technology Policy
- International E-Commerce & Telecommunications Policy
- Science & Technology Policy
- Information & Communications Policy
- Media and Communication Policy
- Science & Technology Policy
- Science, Technology, & Public Policy
- Science, Technology, and Environmental Policy
- International Media & Communications
- Technology, Innovation, & Information Policy

Note: Some programs offer more than one ITM concentrations, and some programs offer the same ITM concentration.

Table 5-7: Factors Related to Offering ITM Concentrations

Factor	Category	Percent* (& Number) of Programs That Offer ITM Concentration(s)
Faculty size	> Median	25.88% (22)
	≤ Median	8.82% (9)
Program Location	In PA School	21.43% (15)
	In Other School	12.82% (15)
Availability of Alternative Program(s) That Offer ITM Courses	Not Available	13.33% (8)
	Available	17.32% (22)
Program Ranking	Top-50	30.77% (16)
	Non Top-50	10.37% (14)
Accreditation Status	Accredited	16.13% (25)
	Non-accredited	15.63% (5)

*: The percentages are for each category. For example, 16.13% of accredited programs offer ITM concentrations.

Table 5-8: Probit Estimates for Having an ITM Concentration: A 3-Model Comparison

Dependent Variable: CONCENTRATION

Independent Variable	Probit 1		Probit 2		Probit 3	
	β	z	β	z	β	z
FACULTY	0.0209**	1.78	0.0210**	1.79	0.0222**	1.92
SCHOOL	-0.0705	-0.26	-0.0404	-0.15	-0.0583	-0.22
OTHER	0.0751	0.29	0.1118	0.43	0.0692	0.26
RANKING120	-0.0060**	-1.99	——	——	——	——
RANKING53	——	——	-0.0156**	-1.92	——	——
RANKING01	——	——	——	——	0.5604**	1.89
ACCREDIT	0.2769	0.85	0.2706	0.83	0.2687	0.83
CONSTANT	-1.0663	-1.99	-0.9570	-1.62	-1.7903	-4.55
N	187		187		187	
LR chi2(7)	14.88		14.6		14.49	
Prob > chi2	0.0109		0.0122		0.0128	
Pseudo R2	0.0904		0.0886		0.0880	

β is an unstandardized coefficient; z is a z-test of β; **: $p<0.05$. All tests are one-tailed tests.

Table 5-9: Probit Estimates of Having an ITM Concentration: Model "Probit 2"

Dependent Variable: CONCENTRATION

Independent Variable	β	Std. Err.	z	P>|z|	[95% Conf.	Interval]
FACULTY	0.0210	0.0117	1.79	0.07**	-0.0020	0.0440
SCHOOL	-0.0404	0.2632	-0.15	0.88	-0.5563	0.4755
OTHER	0.11157	0.2603	0.43	0.67	-0.3986	0.6217
RANKING53	-0.0156	0.0082	-1.92	0.06**	-0.0316	0.0004
ACCREDIT	0.2706	0.3258	0.83	0.41	-0.3680	0.9091
CONSTANT	-0.9570	0.5892	-1.62	0.10	-2.1118	0.1979
N	187					
LR chi2(7)	14.6					
Prob > chi2	0.0122					
Pseudo R2	0.0886					
Log likelihood	-75.05					

β is an unstandardized coefficient; z is a z-test of β; **: $p<0.05$. All tests are one-tailed tests.

Table 5-10: Discrete Changes in Predicted Probability of Observing an ITM concentration

	Min → Max	-+sd/2	Marginal Effect
FACULTY	29.16%	5.06%	0.48%
RANKING53	-23.48%	-5.51%	-0.35%
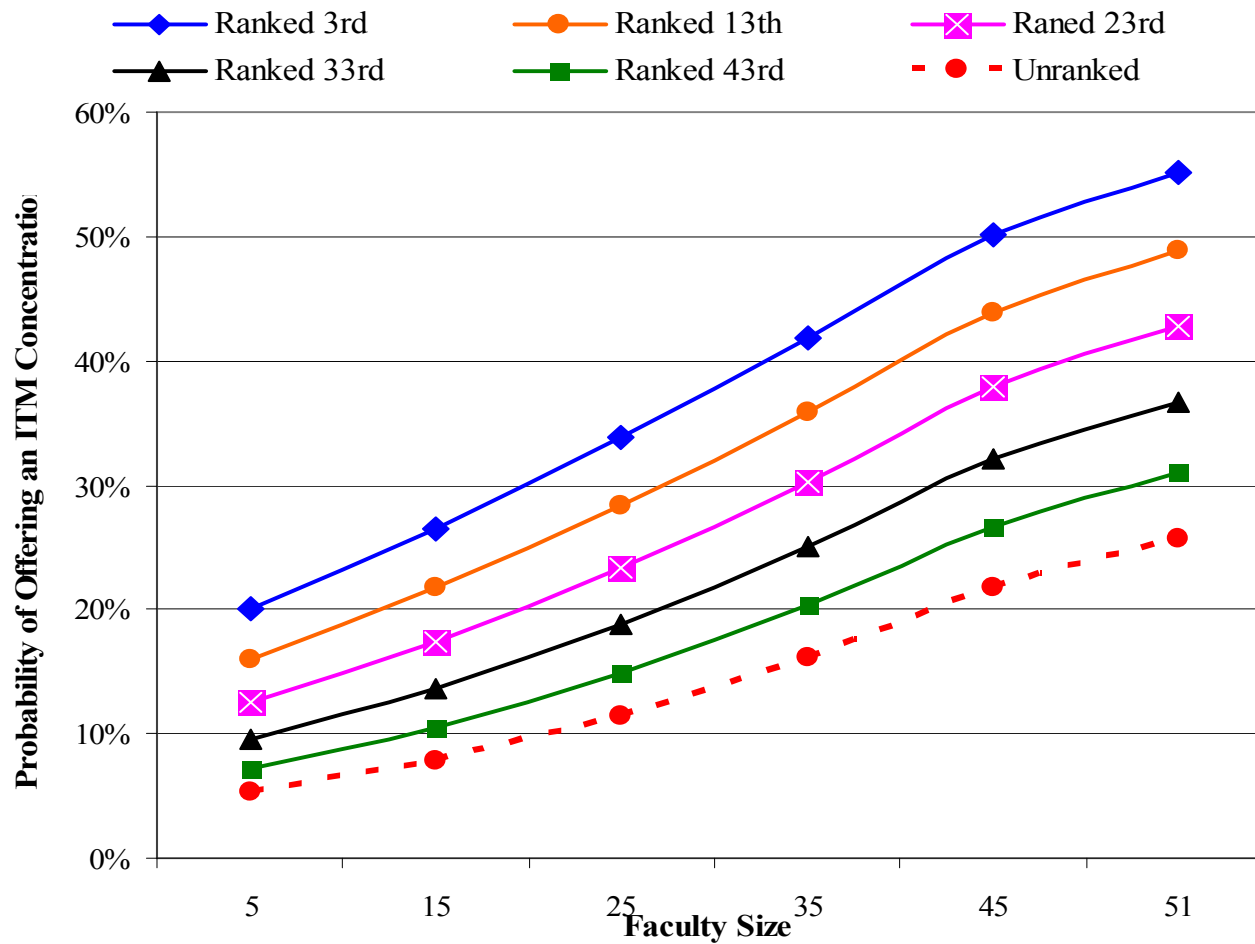
Figure 5-1: Probability of Having an ITM Concentration by Faculty Size and Ranking

Table 5-11: Tobit Estimates of the Ratio of Required ITM Credit Hours Over Total Degree Hours: A 3-Model Comparison

Dependent Variable: RATIO

Independent Variable	Tobit 1		Tobit 2		Tobit 3	
	β	t	β	t	β	t
FACULTY	0.0024**	1.78	0.0027**	2.07	0.0022**	1.69
SCHOOL	-0.0096	-0.26	-0.0045	-0.16	-0.0131	-0.45
OTHER	0.0011	0.29	0.0034	0.12	-0.0011	-0.04
RANKING120	-0.0002	-1.99	——	——	——	——
RANKING53	——	——	-0.0012	1.07	——	——
RANKING01	——	——	——	——	-0.0034	-0.10
ACCREDIT	0.0733*	0.85	0.0713*	1.61	0.0751**	1.68
CONSTANT	-0.2301	-1.99	-0.2734	-3.01	-0.2100	-3.43
N	187		187		187	
LR chi2(7)	5.83		6.85		5.63	
Prob > chi2	0.3232		0.2317		0.3437	
Pseudo R2	0.1006		0.1183		0.0972	

β is an unstandardized coefficient; t is a t-test of β; **: $p<0.05$; *: $p<0.1$. All tests are one-tailed tests.

Table 5-12: OLS Estimates of the Ratio of Required ITM Credit Hours Over Total Credit Hours for the Degree: A 3-Model Comparison

Dependent Variable: RATIO

Independent Variable	OLS 1		OLS 2		OLS 3	
	β	t	β	t	β	t
FACULTY	0.0004**	2.16	0.0005***	2.40	0.0004**	2.04
SCHOOL	-0.0013	-0.30	-0.0006	-0.15	-0.0017	-0.41
OTHER	0.0006	0.14	0.0008	0.19	0.0003	0.09
RANKING120	0.00003	0.64	——	——	——	——
RANKING53	——	——	0.0002	1.22	——	——
RANKING01	——	——	——	——	-0.0015	-0.31
ACCREDIT	0.0084**	1.68	0.0081*	1.62	0.0087**	1.72
CONSTANT	-0.0066	-0.76	-0.0122	-1.23	-0.0025	-0.43
N	187		187		187	
Prob > F	0.2585		0.1791		0.2870	
R-squared	0.0351		0.0408		0.0334	
Adj R-squared	0.0085		0.0143		0.0067	

β is an unstandardized coefficient; t is a t-test of β; ***: $p<0.001$; **: $p<0.05$; *: $p<0.1$. All tests are one-tailed tests.

Table 5-13: Probit Estimates of the Binary Variable "Whether There is Any Required ITM Credit Hours in the Curriculum": A 3-Model Comparison

Dependent Variable: Required01

Independent Variables	Probit_Required 1 β	Probit_Required 1 z	Probit_Required 2 β	Probit_Required 2 z	Probit_Required 3 β	Probit_Required 3 z
FACULTY	0.0211**	1.76	0.0246**	2.04	0.0194*	1.64
SCHOOL	-0.0831	-0.31	-0.0316	-0.12	-0.1156	-0.43
OTHER	0.0083	0.03	0.0307	0.12	-0.0109	-0.04
RANKING120	0.0012	0.36				
RANKING53	——	——	0.0099	1.00		
RANKING01	——	——			-0.0040	-0.01
ACCREDIT	0.6662**	1.66	0.6593*	1.62	0.6823**	1.70
CONSTANT	-2.0707	-3.36	-2.4791	-3.40	-1.9203	-4.25
N	187		187		187	
LR chi2(7)	5.44		6.35		5.31	
Prob > chi2	0.3644		0.2732		0.3793	
Pseudo R2	0.0361		0.0421		0.0352	

β is an unstandardized coefficient; z is a z-test of β; **: $p<0.05$; *: $p<0.1$. All tests are one-tailed tests.

Table 5-14: Tobit Estimates of the Ratio of Required ITM Credit Hours Over Total Credit Hours for the Degree: Model "Tobit 2"

Dependent Variable: RATIO

Independent Variable	β	Std. Err.	t	P>|t|	[95% Conf.	Interval]
FACULTY	0.0027	0.0013	2.07	0.04 **	0.0001	0.0053
SCHOOL	-0.0045	0.0283	-0.16	0.88	-0.0604	0.0515
OTHER	0.0034	0.0278	0.12	0.90	-0.0514	0.0582
RANKING53	0.0012	0.0011	1.07	0.28	-0.0010	0.0033
ACCREDIT	0.0712	0.0443	1.61	0.11 *	-0.0161	0.1586
CONSTANT	-0.27341	0.090734	-3.01	0.003	-0.4524	-0.0944
/sigma	0.111266	0.019319			0.0731	0.1494
N	187					
LR chi2(7)	6.85					
Prob > chi2	0.2317					
Pseudo-R^2	0.1183					
McKelvey & Zavoina's R^2	0.0880					

β is an unstandardized coefficient; t is a t-test of β; **: $p<0.05$; *: $p<0.1$. All tests are one-tailed tests.
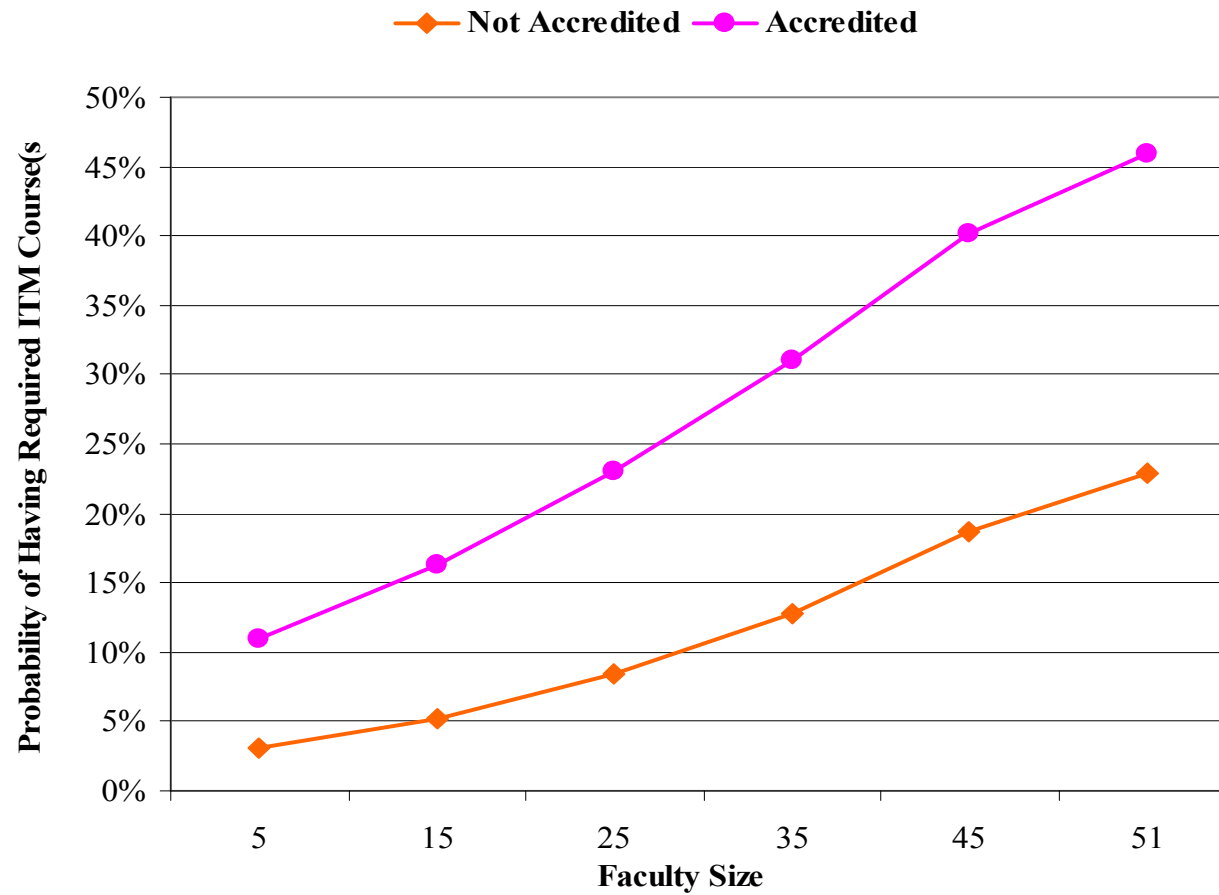
Figure 5-2: Expected Probability of Having Required ITM Course(s) by Faculty Size and Accreditation Status
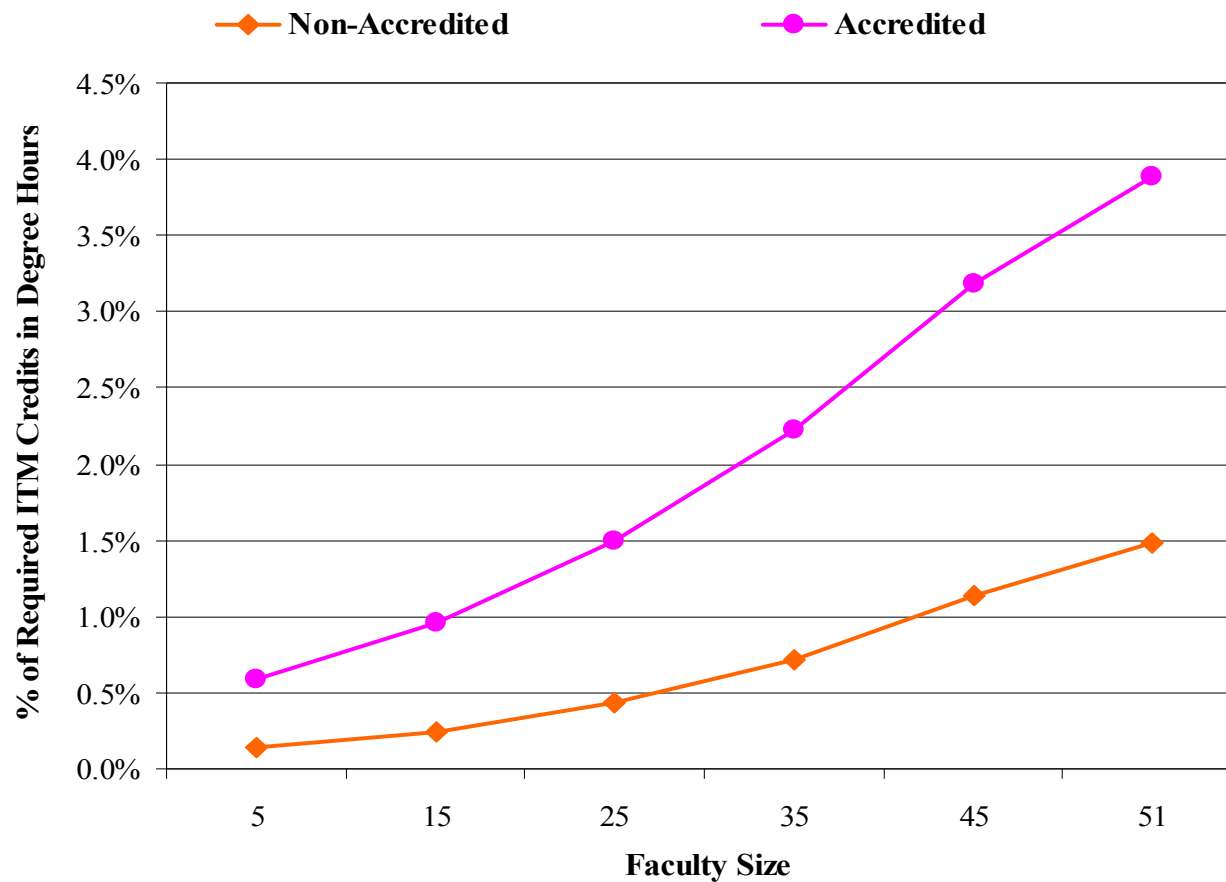
Figure 5-3: Expected Percentage of Required ITM Credits Divided by Total Degree Hours: by Faculty Size and Accreditation Status

CHAPTER SIX
IT-RELATED CURRICULUM DECISIONS FROM THE PERSPECTIVE OF RESOURCE DEPENDENCE THEORY

This chapter uses the lens of resource dependence theory to extract, organize, and analyze information from a series of interviews conducted with MPA program faculty and administrators.[27] The contextual perspective of resource dependence theory emphasizes the relationship between an organization's decisions and its resource environment, an environment in which influential stakeholders face constraints and opportunities. According to the theory, the interpretation of resource constraints and opportunities hinges upon stakeholders' "enactment processes," which in turn are influenced by mechanisms for gathering, screening, selecting, and making sense of information. Thus, crucial for understanding organizational decision processes are identifying the major stakeholders and their roles in organizational decision making, and learning about the enactment processes central in their sense-making of the resource environment they face.

Following from this theoretical perspective, data collected from the interviews are used to identify major stakeholders involved in ITM curricular decision-making and to analyze their enactment processes. The assessment reveals that a program's faculty is the most influential stakeholder group in decisions about ITM, with students, university administrators, potential employers of MPA graduates, and alumni being other

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[27] See chapter 4 for the interview methodology.

stakeholder groups participating in or influencing curricular adaptation processes. Formally or informally, actively or passively, these stakeholders channel their preferences and inputs into MPA programs' ITM decision making processes.

Four major enactment themes were extracted from informants' narratives; first, stakeholder beliefs about the scope of IT-related knowledge and skills MPA graduates need; secondly, the normative judgment of stakeholders about MPA programs' role in equipping students with IT-related capacity; third, the development strategies and goals chosen for the program; and finally, the assessment of the role of other academic units on campus in relation to MPA programs in providing students with IT-related education. The data suggest that these themes alone, and in combination, influence outcomes of IT-related curricular development.

This chapter begins with an analysis of the ways each of the identified stakeholder groups participates in and influences decision-making about ITM curricula. The second section of the chapter focuses on an analysis of the four major enactment themes uncovered from informants' narratives. The final section of the chapter summarizes the main points and offers some brief conclusions.

Stakeholders Identified in ITM Curricular Adaptation Processes

Faculty

Faculty are an important stakeholder in ITM curricular decision-making--both in decisions about concentrations and whether or not to include ITM courses in core curriculum. Of the four programs in the sample that have an IT-related concentration, informants from three stress a connection between creating such a concentration and

faculty involvement or characteristics--specifically, faculty competencies in the case of S1's program, and faculty preference or advocacy in the cases of S6 and S9's programs. Of the three of eight programs in the sample having a dedicated ITM course in the core, informants from two say that faculty advocacy is the major reason behind requiring an ITM course for all students.

Informants also stress the importance of faculty size, but other dimensions related to faculty are also influential, such as the number of faculty members in the program who have a research or teaching interest in IT, the core competencies of the entire MPA faculty, and faculty preferences. Below I discuss faculty size and each of the other faculty attributes that seem to influence IT-related curricular decision-making.

Faculty Size

S11, S4, and S5 believe that faculty size does in some way influence their program's IT-related curriculum revision decisions, especially the decision to offer courses and a concentration in this area. For example, in S11's view, the smaller the faculty size, the more difficult to make the decision to hire additional people in fields, such as IT outside of the PA mainstream, because the decision

> substantially weakens the visibility of the program, because the people won't
> be predominantly publishing in public administration journals or working in
> that area. If you've got a faculty of forty, then you're much more willing to hire
> economists, sociologists, and information scientists, and so on.

S4 and S5 also mention the importance of faculty size. When asked about whether the program had considered offering an ITM concentration, S4 said the program only had one ITM faculty member and "it didn't seem that we have enough resources to really do

that." Likewise, S5 also finds S5's program is constrained by the faculty size. Even though S5's program requires a stand-alone ITM course in the core, S5 thinks students need more than that, and there has been discussion about increasing the number of ITM courses. [28] However, S5 and another informant from the program both maintain that the program does not have the faculty capacity to expand ITM course offerings.

Faculty size may be more relevant for small programs than for larger ones. For informants who do not stress the importance of faculty size during the interviews, it may have been that they are unaware of the importance of the relative large size of their program faculty. Six of eight programs in the sample have larger faculty size than the average size (which is 14.5, as presented in the first section of chapter 5). Short of some sense about a counterfactual scenario regarding their faculty size, it would probably be hard for them to name faculty size as one of the factors that matter in their IT-related curriculum decisions.

For those informants who highlight the faculty size factor, there does not seem to be a size threshold beyond which ITM curriculum decision makers would take certain action. For example, S5's program has an ITM course in the core, but there are less than ten people on the faculty. S4 is another program in the sample that has a dedicated ITM course in the core curriculum. The program itself has close to ten full-time faculty members, and the school where the program is housed has close to three dozens. Nevertheless, the school where S11's program is has more than forty full-time faculty

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[28] The courses S5 wished his program had the faculty resources to offer include process analysis and design, database and webpage development, and project management.

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members, and yet the school decided to remove its IT concentration.

<u>Faculty Competency and Research Interests</u>

Distinct from faculty size, the core competency and research interests of faculty are two other attributes informants consider as influencing curriculum decisions. In fact, in S1's view, faculty competencies or qualifications in the ITM area is the most important consideration behind the creation of stand-alone ITM courses and an ITM concentration in S1's program. S1 says: "we have consciously decided to create concentrations or specializations that the full-time faculty can contribute to."

Similarly, S13 holds that S13' program has developed its concentrations in line with faculty research interests. S10, S11 and S14 also emphasize faculty competency in relation to the ITM curriculum adoptions in their programs.[29] S10 mentions a campus-wide research center that does research with state and local government agencies on ITM and strategies, and attributes the creation of an ITM concentration to the center's tapping into instructor and research resources**.** Likewise, S11 states that faculty capability is one of the considerations when the program adapts its curriculum, which happens about every five years:

> You want to . . . look at your faculty to see what their capabilities are. I hate to put courses in the curriculum when I don't have faculty to teach them.

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[29] Actually, many MPA programs in the country explicitly state in their program handbooks or websites that the concentration areas that the program offers reflects the research interests of the faculty. See, for example, http://harrisschool.uchicago.edu/Academic/degrees/mpp.asp.

S14's says an important consideration is whether the program has qualified faculty with competent technical skills and policy and management knowledge to teach the courses. In fact, according to S14, the curricular evolution in S14's program has reflected the difficulty in finding a competent instructor with both the technical skills and the knowledge about policy and management issues associated with using IT in private and public organizations. For S14, knowledge in policy and management as well as technology skills are essential, and recruiting and retaining people with a good balance in these qualifications is challenging.

Similarly, S11 believes that finding qualified ITM instructors is difficult.[30] S11 observes that "it's been very difficult for the public administration schools to have the resources to produce doctoral students who have a specialization in this area. It's been a real struggle." In turn, this shortage in the supply of PhDs in public affairs with a research interest in ITM has led to the problem that PA programs have to rely on PhDs from other disciplines to teach ITM courses. This group has to be attracted with salaries that are higher than the average PA faculty pay rate, which "really disturbs the distribution of pay, makes people angry, makes people upset, and it's just very difficult to justify." S11 also feels that the disconnect between the PA and IT fields contributes to the problem:

> I think it would be very interesting if you could find the top people in information science in the public affairs schools around the country and find out where they're publishing, and find out where their material is cited. I'd be

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[30] Similar opinion was expressed by several people at an IT session at the 2006 NASPAA annual conference attended by MPA faculty members from across the country.

very surprised to find out that their material is published and cited in mainstream public administration journals.

In S11's view, the disconnect between the fields compounds the problem of producing PA PhDs with the skills needed to deliver ITM curriculum, and makes it difficult for MPA programs to recruit qualified ITM professors the program can afford to hire and keep. Under these circumstances, some MPA programs have turned to other academic units (e.g., the business school) for offering ITM courses, and this phenomenon of "farming out" (in S11's words) ITM instruction from MPA programs further reinforces the disconnect between PA and ITM. In fact, the School where S11's program is housed decided not to hire its own ITM faculty members since the last one left the School, and the semi-required ITM course listed in the program's core curriculum is now taught by an adjunct professor at the Business School.

Faculty Advocacy

Faculty advocacy appears to be an important element shaping ITM curriculum. Informants from the three programs in the sample which include a dedicated ITM course in the curriculum say that faculty advocacy is the deciding factor in shaping this outcome. Informants in two of the four programs in the sample which have an ITM concentration attribute the creation of the concentrations to strong advocacy from the faculty.

For example, S5 attributes the inclusion of a core course to the advocacy of a professor who taught a quantitative course and had a strong computing background. Similarly, S4 says that the inclusion of IT into the core "was more faculty perception that there were some gaps."

S9's program includes an ITM concentration, and it is because of "very strong

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interest on the part of the faculty to pursue the creation of this specialization." S9 also emphasizes that "Most of the faculty would agree that having a focus on information and technology is part of a well-rounded program. If we didn't have that specialty focus, we'd be missing something."

S6's program recently created a concentration in the technology and information policy area, and two faculty members played instrumental roles in this creation. They are both interested in studying technology policy issues.

Students

Several informants touch upon students in their answers to questions about the considerations behind their programs' IT-related curriculum decisions, but only one informant suggests that students play a central role in such decisions. Three major considerations regarding students emerge from informants' narratives: the attempt to attract more students, student preference or interest, and students' IT-related knowledge and skills.

<u>Attracting More Students</u>

Two informants suggest using an IT-related concentration as a marketing tool to attract more students to the program. For example, S6's program started formally listing concentrations in its curriculum recently. Below is part of the reasons in S6's view.

> I think primarily the students have always been able to focus or concentrate on their electives any way, but by packaging them up to specialization, and marketing those specializations, we think that's a little more enticing to students to look more closely at our program.

Similarly, S1 says

We had hoped when the concentration was created . . . that this might be a way
of encouraging . . . people to take a couple of classes this year and then enlist
in the MPA program later on. And we have had a few students who have done
that, but not very many.

However, the lack of demand has prompted S1's program to review its IT-related
curriculum, with the possibility of "making IT more management- or project-
management-relevant," which reinforces the impression that student enrollment is an
important consideration in S1's program.

Student Preferences or Interests

Student preferences or interests can influence the development of IT-related
curriculum. Before S6's program created an ITM concentration, for example, there had
been an ITM project course, in which students expressed an interest. In S6's account, the
instructor of the course then channeled that interest into the development process of the
ITM concentration.

Another example is offered by the program of which S3 is a member. The
university in which S3's program is situated has strengths in the areas of science and
technology policy. In S3's view, incoming students expect to receive high-quality
instruction in these areas, and offering an ITM concentration is one way to help meet this
expectation.

Student interests or preferences can also influence the faculty's assessments of
existing IT-related curriculum--both courses and concentrations. Five informants from
five different programs say IT-related courses tend to be popular, although another
informant suggests the opposite: similar courses in this informant's program tend to
receive the lowest student evaluations in the MPA curriculum. Of the five informants

who report IT-related courses are popular, two of them say this popularity does not necessarily translate into high enrollment in IT-related concentrations. Below I detail informants' observations about how IT-related courses and concentrations are received by students.

Students in S13's program give positive feedback to elective IT-related courses; likewise, S6 indicates that students are interested in ITM curriculum. Students in S14's program show a very high level of interest in ITM course: "our IT courses are spilling out the door … always filled with capacity … over capacity."

In contrast, S11 says ITM courses "tend to have the lowest teaching evaluations of the courses our students take. They've been very rough." and "We just keep looking at these things [student evaluations for ITM courses] and scratching our heads and saying 'what is it that the students want that we're not delivering in these particular courses?'"

Student interest in S1's program tends to fall between these two extremes. S1 says that

> There is a curiosity . . . but there isn't the sort of dedication to specialize in information technology. Part of that might also have to do with students looking around at what employers are looking for and I'm not sure they are finding a lot of employers saying information technology is a specialty we are looking for.

S1's program anticipated more student interest in its newly-created IT concentration. The lackluster performance of this concentration in attracting students has prompted S1's program to evaluate IT-related curriculum and adjustments are likely. Another informant from S1's program adds that

students realize that it's a limited education in IT. . . If they want to specialize it, they shouldn't do an IT course. They should do an IT degree. So there is that general structure, that it doesn't make sense to keep pushing IT specialization.

Similarly, S5 finds that students come to MPA programs not to do IT or ITM. Even though students show interest in the ITM course the department offers, they have not asked for more offerings in this area.

Last, S10 mentions that the ITM concentration in S10's program is not as popular as some more traditional PA sub-areas, such as managing organizations, nonprofit management, and local government management. However, since an ITM professor was brought into the program, the interest among students has grown. This professor has developed three or four ITM courses for the concentration.

Students' IT Knowledge and Skill Levels

The IT knowledge and skill levels students bring to the program influence several programs' IT-related curriculum decisions. For example, in S14's account, students' IT capabilities are one of the three main issues driving curriculum development.[31] S14 and S11 both indicate that students coming to their programs have good IT skills and knowledge. S3 also says that most students coming to the program are "reasonably capable of information technology, so it's not something we feel they need training in."

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[31] The other two are 1) the needs in current public agencies, given that "IT is absolutely fundamental for professionals to function in complex environment," (in S14's words) and 2) if the program has got qualified faculty (with competent technical skills and policy and management knowledge) to teach the courses.

However, S14 sees varied students' IT skill levels. To adapt to this diversity and the generally savvier IT skill and knowledge levels students have compared to students from earlier times, S14's program has added some more advanced skills, such as database management and policy as well as management issues into a required IT course later on.

University Administrators

Most informants who brought up the topic of administrators suggest that administrators generally play a facilitating role in IT-related curriculum development. Four informants from three programs express the positive roles their administrators play in their individual program's ITM curriculum modifications, of which three involve an ITM concentration creation, and the other requires an IT course for all MPA students.

For example, S9 believes that the leadership that makes it possible for the program to create the specialization in ITM comes from the dean of the school where the program is housed, and the chairs of the departments that integrate faculty resources and cross-list courses for this specialization. Similarly, in S2's account, the dean and a few senior faculty members supported and advocated developing courses for an IT concentration. The program director also played a supportive role. Likewise, S6 says that the graduate advisor and the associate dean at the school "really like getting information policy, information management, information technology into the curriculum." Moreover, S14 says that the director of the program and a major ITM faculty member not only always pushes for more ITM content in the curriculum, but also consciously exchanges ideas with colleagues from other IT-related disciplines and other universities, and, in his own account, "trained" PhD students to cultivate the ITM faculty the program would need.

In contrast, there is one case where a senior administrator was not supportive of

paying the salary that was necessary for hiring a qualified ITM faculty member, because the salary is higher than average PA faculty salary and that "creates frictions among faculty" (in S11's words).

Potential Employers of MPA Graduates

S9's program includes government practitioners as one of the groups that the program consults when it adapts its curriculum. Government managers at both the state and federal level are surveyed, and asked about the skills and competencies that they feel people need to be successful in government. S14 also highlights the perspectives of public agencies and stresses that students need ITM knowledge and skills to look for jobs. S14 mentions the role of an advisory board for the school in which the MPA program is housed in influencing the program's thinking about its IT-related curriculum. This advisory board is made up of a combination of distinguished alumni, advisors from federal agencies, and executives from business organizations, and it makes ". . . a strong recommendation that we continue the direction of IT." S3 is another informant who reports that the kind of employment students seek is one of the important factors influencing curriculum development. [32]

Alumni

Beyond their representation on Boards, as just discussed, alumni opinion is sometimes more generally solicited. For example, S2, S3, S6, and S11 mention that their

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[32] S3 stated that "We tend to build the program based on the resources we have, and the students we attract and the kind of employment they seek."

programs solicit alumni input during curriculum revision processes. S5 says alumni have communicated the importance of e-government, and this opinion has reinforced the continuance of the required ITM in the program's core.

Enactment Themes

At one level, resource dependence theory would seem to imply a deterministic connection between organizational behavior and the constraints organizations face to acquire and retain crucial resources for organizational survival and well-being, with the implication, for example, that organizations facing similar resource environments would tend to exhibit similar behavior. However, through "the enactment" concept, the theory leaves room for organizations to pursue varied actions, even when faced with similar resource environments, because decision issues can be framed in different ways, and the resulting decision-frames can lead to differentiated decision outcomes.

This section below is organized by four sets of common issues that emerged from informants' narratives. The discussion looks into the varied ways in which informants perceive these issues, and how those perceptions influence curricular decision-making in the informant's programs.

IT-related Knowledge and Skills MPA Graduates Should Know

Informants all agree about the general necessity to provide students with education to cope with the permeation of IT into public organizations. However, in their answers to questions about the factors driving their IT-related curricula, informants do not share the same opinions about the scope or depth of skills and knowledge that programs should

offer to students. In particular, informants display diverse views on the importance of equipping students with technical skills versus a more theoretical perspective.

For example, S11 views technical capabilities as essential:

Simply knowing that it's an issue doesn't help at all, because it doesn't conquer the problem. The problem is really at the technical level. If you don't have a good grasp of the technology, you're not of much use in teaching students how to grapple with it. It's just no good to teach them theory in this area without practicing it.

S9's has a different perspective reflected in the following critique of NASPAA standards:

NASPAA standards with respect to IT are too narrow. It's more on technology than it should be, and not enough on policy and management, and on infusing and appreciation for information as an instrument for achieving public policy goals, and that's really the direction we take here … The existing standards focus on basically knowing about how to use technology, and a little bit about how to manage the technology life cycle, and those sorts of things, but practitioners were saying that it's nice to have a baseline level of knowledge about that stuff, but that's not really what you need. What you really need is to be able to think strategically or understand how the world works in system and process terms to manage complexity.

A middle ground view is voiced by S5 , who considers the following areas necessary for MPA graduates: 1) technical skills; 2) database, spreadsheet, PowerPoint, webpage, information security, downloading software, information management, appreciation for how to manage information to assist policy making, and 3) information policy (involving law, privacy, government records, and how technology affects them).

The IT-related skills S14 believes students need in today's job environment share the technical features S11 underscores, but they can be used to facilitate the achievement

of the managerial and strategic capabilities that S9 accentuates. These skills include: 1) basic skills and knowledge to gather and organize information, and to set it up in a way that students can search the information from different perspectives and from different roles to support decision making, 2) ability to set up a collaborative work format (e.g., a chat system) to work at the same time across different agencies or locations, and 3) ability to set up an interactive feedback mechanism (e.g., a blog). S14's program has adapted the curriculum multiple times over the past ten years to fit all these three areas into the required IT course.

The Role of IT-related Components in MPA Education

As a general observation, S9 and S11 find that ITM has become an integral part in Master of Business Administration but not necessarily in MPA education. In other words, in their view, MPA programs have shown varied degrees of accepting ITM as a necessary curricular component. Such an observation is consistent with the different normative judgment that informants make regarding the role of ITM education in MPA curriculum.

Five informants see ITM knowledge and skills as essential for students to function in their future job environment, and these informants also believe that MPA programs should prepare students in this area. For example, S14 sees ITM skills as necessary to the work the students are doing. S14 reckons "It's like policy analysis, budgeting, statistics, and so I don't think there is any question about whether or not this a necessary set of skills they need to have."S10 also strongly believes that MPA programs should prepare students to use IT tools in their work and decision making: "if MPA programs are not evolving around IT, then they would be left in the dust." Similarly, S9 mentions that "most of the faculty would agree that having a focus on information and technology is

part of a well-rounded program. If we didn't have that specialty focus, we'd be missing something." S9 adds that

> I think it's really really an important area for public managers. If you go out and look how the world works today, and the issues in the public domain, or you just pick up a newspaper and in the last four days in a row there have been reports about that--personal information from government agencies, the way that government uses information, in the war on terror the way we use information to design services and programs, it's just so critical and we need to build that appreciation and understanding into the MPA curriculum regardless with the career choice that students intend to make at the end. It's a basic kind of knowledge that they really need.

However, even among the informants who accept the importance of preparing students with IT-related knowledge and skills in MPA education, there is a sense of limit to how much ITM to push into the curriculum given the perceived job market niche for MPA's. Several informants imply that if students are really interested in information management jobs, they should either pursue an additional degree or a different degree, because in their view, the basic objective of MPA education is to prepare tomorrow's generalist managers who need several areas of knowledge and skills, and ITM is but one of them. For example, S2 remarks that

> we are a management shop, not an IT shop. So, for people to get a MPA degree, and to have the qualifications that requires for IT, sort of a CIO [chief information officer] or IT person, they would have to have two degrees, or at least one and a half.

In the same vein, S11 states: "The question in their [students'] mind would be: why should I get an MPA if I'm really interested in information science? Why not simply go over to the business school and take that degree? It's a whole degree!" In fact, in addition

to offering an MPA degree, S14's school also offers a joint program with the school of information sciences on campus for students who would like to pursue deeper and broader exposure to IT and ITM. Graduates of the program, who get both an MPA degree and a master of science degree in information sciences, "get the top jobs. . . moving very quickly to CIO positions."

There are also informants who do not see ITM as an essential component for every MPA program. For example, according to S3, the employers that his program's students work for prefer employees with broad decision-making perspectives, rather than technical specialists. S3 believes: "it's not so that every student needs to be specialist or have particular strength in the area of information technology management." Additionally, S13, who is from an MPP program, says this program has not considered offering ITM as one of the concentrations because the area would be more fitting under public administration. S11, who is from an MPA program, shares a similar feeling about ITM being a sub-field of PA, not PP.

Program-Specific Development Strategies

Strategic planning can affect IT-related curricular development. Informant's narratives reveal a number of interesting differences among programs reflecting different concepts of the program's strategic goals.

S2 and S3's cases illustrate how strategic objectives can differ even when program characteristics are otherwise similar, producing different outcomes. Both programs are about the same size after experiencing the same scale of expansion--a doubling of the faculty size--from the late 1990s until recently. In conjunction with this evolution, both programs undertook major curriculum change, including developing new concentrations

and creating new courses to meet concentration requirements. Additionally, faculty competencies and students were included in the considerations for both programs. In the case of S2's program, the decision was made to build on the core competency of the program faculty with the result that the program developed an ITM concentration and three ITM courses. In contrast, decision-makers in S3's program decided to tap into the university's strengths in science and technology and develop a concentration in this area instead.[33] S3's program does not offer any in-house courses, relying on other academic units in the university.

Like S3, S6 does not believe that S6's program has a comparative advantage in ITM yet, notwithstanding, the program of informant S6 still created an ITM concentration. There are other areas in which S6 believes the program is more competitive, but decision-makers still concluded it was important to have a well rounded program that included an ITM concentration.

In contrast, S11's program recently removed its ITM concentration. In S11's own account,

> I'd like to have it [an ITM or information science program], but I'd like to have a lot of stuff in my school that I can't afford to have. So, I think it's tended to spin off to the business schools where they do have the resources to put it together.

Offering yet another permutation, S9's program sees ITM as an important enough strategic goal for the program that it has developed "a step ahead of NASPAA standards"

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[33] S3 thinks this concentration is distinct from ITM concentrations.

in terms of strategic thinking about ITM and development of ITM curriculum. According to S9, the program is a leader in this area and has "taken the opportunity and made the commitment" to working with other programs for implementing NASPAA's IT standards.

The Role of Other Academic Units on Campus

One of the issues in informants' framing map is the presence of other same-campus academic units that offer IT-related courses.[34] Informants' narratives show connections between the ways in which they think about these outside course offerings and the content of an MPA program's own IT-related curriculum.

A major issue regarding IT-related courses offered by other campus units is how their existence affects an MPA program's in-house course offerings. Informants suggest two types of patterns. To some informants, courses in other campus units act as substitutes for in-house IT-related courses, diminishing the need for in-house offerings. For the others, courses in other departments play mainly a complementary role to their counterparts in MPA programs, opening up opportunities for MPA students who would like to receive broader or deeper education in IT or ITM than can be offered in-house.[35]

A critical variable in determining whether outside department courses can be

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[34] The most frequently brought-up departments in informants' narratives include planning, decision sciences, MIS, information sciences, information systems, informatics, geography, computer science, and political science.

[35] The co-existence of competing perspectives about other campus units' IT-related courses is likely to be a reason why the variable "OTHER" in Chapter 5 does not show significant results. These views are self-cancelling when aggregated across the entire sample, giving an ambiguous conclusion about the impact of other campus units on a PA department's in-house offerings.

substitutes for in-house IT-related courses involves informants' normative views about the role of MPA programs in IT education. For S9 and S14, MPA programs have unique perspectives regarding IT use in public agencies and public service, for example, the database management course offered through a computer science department would be different from one offered through an MPA program. Therefore, even though there are quite a number of ITM courses offered by other academic units on campus, S14's program still has four faculty members in the program with an IT-related interest and the program offers four in-house courses in ITM. Likewise, S9's program offers two ITM courses that are "truly public administration" (S9's words) at the same time encourages students to take more courses on IT or ITM at other departments. These narratives provide evidence to support the proposition that the availability of IT-related course offerings outside the program does not always decrease the likelihood that a program would offer its own IT or ITM courses.

However, for informants who believe less strongly about the uniqueness of IT-related courses offered in MPA programs, IT-related courses outside the department are considered largely substitutable for in-house courses.

The view that IT-related courses offered outside the program are substitutable for in-house offerings is reinforced in programs lacking in-house capability. After losing the only faculty member with an ITM specialization, S11's program has not hired any faculty member or adjunct with an ITM background, relying on the business school for the semi-

required ITM course.[36] S11's view is the less ITM competence in the faculty in an MPA

program, the more the program has to tap into the faculty resources from other programs

on campus to provide students with courses in this area. He adds that

> ideally, the way that collaboration works is that you have a faculty member in
> the department who has a primary interest in that area, and they get together
> with faculty members in other institutions, other departments around campus
> and they kind of decide what the content of the curriculum should be and how
> it applies to students who are coming in from different perspectives. That's the
> way we did when we had a faculty member on our department staff. That
> person was the primary person for doing that coordination. In the absence of
> such a faculty member, the primary person for doing the coordination is
> usually an academic counselor, somebody who typically does not even have a
> MPA degree. They are members of staff, and clearly the latter system doesn't
> work as well as the former system.

In cases where there is collaboration of some sort between an MPA program and

other campus units delivering IT-related courses, several collaborative arrangements are

seen, and these arrangements vary along several dimensions, including the degree to

which the collaboration is institutionalized, the scope and content of the collaboration, the

degree to which an MPA program is engaged in shaping the IT-related courses the

program delegates other campus units to offer, and the space in the MPA curriculum for

students to take outside courses.

First, the extents to which collaborative arrangements are institutionalized vary

along a continuum. At the lower end of the continuum, S5's program lists clusters of

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[36] See the quote in page 156 for S11's narrative about why the course is called "semi-required."

courses (including courses offered by other campus units) that students can take in the program brochure. The program does not formally offer any concentrations. Another example is S6's program, which recently created an IT-related concentration in the technology area as an attempt to bring in more related course resources from other academic units on campus to complement the program's own ITM research and teaching capabilities.

Moving toward the higher end of the continuum, S10, S4 and S2's programs have had joint appointments in ITM with other campus units, while S14's program and the school of information sciences offer a joint degree program.

Second, in terms of the scope of collaboration, S11's program cross-lists ITM courses with the business school; a broader collaboration exists between S10's program and other campus units after an "ITM faculty cluster" was institutionalized by cross-listing courses. The sources of the faculty include several departments, programs, and research centers on campus.

Third, the content of collaboration ranges from spinning off all stand-alone ITM course offerings to other campus units to incorporating guest lectures that affiliates to a campus-wide research center offer into non-IT-focused courses in the MPA core curriculum (in S9's case). In between, several programs have in-house stand-alone IT-related courses, and encourage interested students to sharpen or widen their IT capability by taking courses from other campus units.

Fourth, there are different degrees to which MPA programs and collaborative campus units interact with each other about the content of IT-related education MPA students receive. Some informants are familiar with the IT-related courses offered by

other departments on campus and ready to advise interested students to reach out and take suitable courses. These informants tend to have regular exchange with colleagues from other campus units with a shared interest in IT-related topics. In contrast, when S7s department (which is in the business school) was asked to offer an ITM course for an MPA program, the input from the MPA program on course guidelines was "fairly light" (S7's words), involving only provision of some course syllabi and outlines as well as brochures from other universities' MPA programs, and this input only took place at the beginning of the course offering request. S7 hired an adjunct professor to teach the course. According to S7, the MPA program let the adjunct professor decide what needed to be taught, and "they [the MPA program] didn't have that much influence on what we ended up doing …"

The last issue is the space in the MPA curriculum for students to take courses from other departments. To the extent that an MPA program faces pressure to generate tuition revenue, the program will try to restrict students from taking outside courses, all else constant. Additionally, departmental funding constraints might provide an incentive to "subcontract" out teaching in IT-related areas traditionally outside the province of MPA programs.

For whatever reason, some programs set up their curricula in ways that make it difficult for students to take courses in other campus units. For example, one program in the sample requires thirteen courses for the degree, with nine of them core courses, three for concentration requirements, with only one course remaining as an elective. The latter is the only course which can be taken outside the department.

Even with more flexible curriculum requirements, some programs may implicitly

or explicitly restrict students from taking courses from other academic units on campus. S2 emphasizes that "… we're in the situation where funding is going down for universities, and programs are increasingly forced to find funding." S2 adds that his program usually does not allow students to take other departments' courses to count toward the program's IT concentration, with the exception of a database management course offered by the business school.

Summary

This chapter analyzes how the relationship of MPA programs to their resource environment affects IT-related decisions. To conduct this analysis, this chapter investigates the major stakeholders involved in IT-related curricular decision processes, and the major themes in these stakeholders' enactment processes that help shape their programs' IT-related decisions.

The main stakeholders mentioned in informants' narratives include faculty, students, university administrators, potential employers of MPA graduates, and alumni. To varying extents the preferences of these stakeholders are channeled into their programs' IT-related decision making processes, with some participants' involvement in such processes more formal, regular, active, or influential than the others'.

Of all the stakeholder groups, informants identify faculty as the most influential in shaping IT-related curricular decisions, but faculty size is only one important dimension. Other dimensions include the number of faculty members in the program who have a research or teaching interest in IT or ITM, the core competencies of the entire MPA faculty, and faculty advocacy for particular curricular components.

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In terms of faculty size, some informants endorse the idea that programs housed in institutions with larger faculties have an advantage in offering more advanced ITM curriculum, although there does not seem to be an absolute size beyond which ITM curriculum development is certain.

If we consider only the part of the faculty interested in ITM teaching or research, we find several informants expressing the view that recruiting and retaining people with a good balance between technical skills on the one hand, and knowledge on technologies' policy and management implications on the other, is challenging, and this challenge affects IT-related curriculum development at their institution.

Some informants highlight the crucial role of certain faculty members' advocacy as a determinant of their ITM curriculum decisions. Informants from all three programs in the sample with a dedicated ITM course in the core curriculum attribute faculty advocacy as the number one reason behind the inclusion of the course in the core, and informants from two of the four programs in the sample with an ITM concentration express the view that strong interest from the faculty is most responsible for the creation of the concentrations in their programs.

For most informants, students, university administrators, MPA students' future/potential employers, and program alumni have some influence on IT-related curriculum decisions. For the informants who touch upon students' role in their programs' IT-related curricular decision processes, three major issues emerge: the attempt to attract more students, student preference or interest in ITM, and students' IT-related knowledge and skills.

Resource dependence theory suggests that stakeholders' views of curriculum

development reflect their cognitive frame of reference, or enactment process. Focusing on the most influential stakeholder--the faculty, the second section of this chapter finds informants' narratives indicate four major themes that are central in faculty reference frames, or enactment themes.

The first is the normative judgment faculty make about the specific IT-related knowledge and skills MPA students should know. Informants do not agree on the scope or depth of the skills and knowledge that programs ought to offer, albeit they generally acknowledge the necessity to provide students with some education to cope with the penetration of IT applications into public organizations. In particular, faculty exhibit diverse views on the importance of equipping students with technical skills versus developing a more theoretical, conceptual perspective on using IT in public decision-making and management.

The second theme that emerges is the extent to which informants translate their normative views about what IT-related capabilities MPA students should have to the importance of IT-related components in MPA education. Some informants who see IT-related knowledge and skills as important for students to function in their future job environment think that MPA programs should offer ITM curriculum. Other informants believe ITM knowledge is important, but it is not the role of MPA programs to offer it. Even among the informants who believe MPA programs should offer IT-related content, the sense is that the offering should be limited, based on the premise that the objective of MPA education is to prepare tomorrow's generalist managers who need several areas of expertise, including, but not greatly restricted to, ITM.

The third enactment theme has to do with the development strategies chosen by

individual programs. Different development strategies explain why some programs with similar faculty sizes and at similar developmental stages differ substantially in the type and amount of IT-related curriculum they offer. To the extent that a program's decision makers feel IT-related content is not an essential part of MPA education and ITM development is not one of their strategic objectives, strategic thinking tends to drive the program away from investing in faculty resources in the ITM area.

The last enactment theme is about other campus units that offer IT-related courses; in particular, how these external course offerings influence in-house curriculum development in MPA programs. For some informants, public administration faculty have unique perspectives regarding IT use in organizations, and so IT-related courses offered by departments of information sciences, informatics, geography, or others are not substitutes for such courses offered by in-house faculty. In contrast, informants who believe less strongly about the uniqueness of MPA-program-offered IT-related course are more ready to support relying on campus units outside the program to provide IT-related education, especially if their own MPA program lacks the capability to deliver such courses.

In cases where there is collaboration of some sort between an MPA program and other campus units delivering IT-related courses, varying collaboration arrangements exist. There are five major dimensions along which these arrangements differ: the degree to which the collaboration is institutionalized, the scope of the collaboration, the content of the collaboration, the degree to which an MPA program is engaged in shaping the IT-related courses the program delegates other campus units to offer, and the space in the MPA curriculum for students to take outside courses. An MPA program's collaborative

arrangement hinges on the combination of these dimensions, and in turn has implications for the IT-related education MPA students receive. These dimensions also help thinking about how to implement collaboration for MPA programs that would want to expand the pool of resources accessible for students who would like to enhance their IT-related capability.

In conclusion, this chapter complements the previous chapter in four major ways. First, the results herein hold up the influential role faculty play in MPA programs' IT-related curricula as chapter 5 finds. Second, this chapter looks into the multi-dimensions in which MPA faculty exert their influence on IT-related curricular decision making processes. Third, by parsing informants' narratives, this chapter also uncovers other variables and considerations not discussed in chapter 5. Hence, a clearer picture emerges with more participants and their roles in MPA programs' IT-related curricular adaptation processes. Finally, the chapter also presents the nuances in informants' enactments of four major issues, how such enactments impact their perceptions about the resource environment they face, and in turn how such perceptions shape these IT-curricular decisions in MPA programs.

CHAPTER SEVEN
IT-RELATED CURRICULUM DECISIONS FROM THE
PERSPECTIVE OF INSTITUTIONAL THEORY

This chapter uses the lens of institutional theory to analyze the information provided in informant's narratives. The analysis focuses on two questions. First, to what degree do informants believe that IT-related decision making within their own programs is influenced by potential pressures for organizational conformity, as described in the institutional literature? Questions to informants are suggested by the three types of isomorphic pressures or processes (coercive, mimetic, and normative) posited in the institutional literature. Several variables examined in the empirical analysis of chapter 5 (e.g., NASPAA's accreditation and curricular standards, the USNWR rankings, and program affiliation) are potential sources of this kind of pressure.

The second question asks: to what extent are MPA programs' IT-related curricula alike? This analysis offers a more detailed and complete picture of IT-related curriculum attributes than was captured in the summary statistics in chapter 5. The goal is to better assess the degree of institutional isomorphism in IT-related curricula possibly influenced by coercive, mimetic, or normative mechanisms.

This chapter is organized to investigate these two research questions. The first section assesses each of the potential sources of pressure for MPA program conformity and how informants say programs have responded to such pressures in their curriculum decision-making. The second section assesses the degree of institutional isomorphism across MPA programs' IT-related curricula. The final section offers a summary and gives a conclusion for the chapter.

Potential Sources of Isomorphism From the Institutional Environment

Coercive Pressures

The basic thesis posited by institutional theorists about the connection between coercive pressures and institutional isomorphism is that powerful organizations try to codify their goals and procedures as institutional rules through their regulatory or credentialing authorities. To the extent that organization X is dependent on organization Y, X would follow some rituals of conformity to meet the institutional expectations from Y.

In institutional theorists' conceptualization, the sources of coercive authority include two types: government mandates and regulations, and less binding but still potentially influential standards or guidelines suggested by governments or professional organizations, for example, certification requirements, accreditation standards, or other types of educational and credentialing systems. Two possible examples of the latter class of "coercive" authority come to mind in the context of this study: NASPAA's authority to accredit MPA programs and the USNWR rankings of MPA programs. The analysis below discusses the way NASPAA's accreditation standards and the USNWR rankings affect MPA programs' decision-making about IT-related curriculum.

NASPAA Accreditation

NASPAA accredits master degrees in public affairs and administration that meet its

standards.[37] The standards include a "section 4.0" on curriculum, which contains a subsection "4.21 Common Curriculum Components." This subsection stipulates three areas to be developed in MPA programs' core curriculum, one of which is "information management, technology applications, and policy" ("IT standards" hereafter). However, the requirements are flexible. No specific courses are required; courses offered by other campus units outside of the MPA program can also count toward fulfilling the requirements; and programs can allocate time to each curriculum component as they see fit for the development of program strengths (NASPAA 2006a: 9).

To most informants, complying with the IT standards constitutes no coercive pressure for conformity, because their programs would still offer their existing curricula without these standards. For example, S2, S4, and S8 think NASPAA plays no role in their curricular decision making. Similarly, S3 does not think NASPAA's IT standards changed or influenced the curricular development in S3's program. Informants S5, S14, and S13 in fact believe that NASPAA's IT standards validate what the programs are doing in their curricula. Taking this point a step further, S9 considers S9's program not only is not coerced by NASPAA into adopting IT curriculum components, but that the program's IT-related curriculum is a step ahead of NASPAA's standards.

In contrast to these opinions, two informants indicate that NASPAA standards do play a role in their curriculum decision-making. For example, S6 points out the influence from NASPAA's accreditation standards on the program's decision to create an IT-

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[37] The full name of the standards is "standards for professional masters degree programs in public affairs, policy, administration."

related concentration:

> As we were doing our self study, our self review, and preparation for the accreditation, we went through these standards. . . . that caused us to look at our curriculum and see what we're doing in it, and that also prompted the need to develop a specialization in that area, because that would then highlight the fact that we take it seriously, and that technology is becoming a part of providing public service.

S11 seems to perceive an even higher level of pressure from NASPAA's accreditation standards:

> NASPAA's accreditations standards are very compliance-oriented. In other words, they make a list of things, and say that these are the things that you've got to do. So, we tend to follow them very closely, but actually implementing them is kind of a struggle. . . . if they list something, we really try to get it into the curriculum.

Even though S11's program tries to comply with NASPAA's accreditation standards, S11 thinks two constraints make the compliance challenging. The first challenge is "[in the standards] there are too many things to fit into the curriculum," and the second one is that S11's program faces limited faculty resources for delivering IT-related education. To meet the IT standards, while maintaining a reasonable number of the total credit hours for the degree and considering faculty resources, the program uses two approaches: 1) integrating informatics topics into a required entry-level survey course that introduces the history and reform of public administration, and 2) making a stand-alone ITM course "semi-required"--students are required to choose one course out of several courses, which include this ITM course.

Three programs in the sample have a required IT-related course in the core

curriculum, but no informants from any of these programs attribute this core curriculum

feature to an attempt to conform to NASPAA's IT accreditation standards.

In summary, the picture presented by informants is mixed, with the standards

appearing to have little impact on the decision-making of the majority of the sampled

programs (the programs of informants S2, S3, S4, S5, S8, S9, S13, S14) but exerting

some impact in the decision making of several (S6 and S11's programs).

USNWR Rankings

The USNWR's ranking system is conceivably another potential source of coercive

authority from the institutional environment that might pressure programs to adopt

certain practice in IT-related curriculum design. Interestingly, informants show different

perceptions about this ranking system.

Most informants agree that there is no explicit criterion in the ranking

methodology, [38] and the nature of it is peer ranking. Two informants (S2 and S6) consider

the ranking "sort of a popularity contest," given the methodology it uses. S14 also thinks

the USNWR ranking is based more on reputation than any substantial evidence, and is

"pretty skeptical with the rankings," even though S14's program ranks relatively high.

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[38]   The USNWR ranking is essentially a peer ranking. It is based on a survey of deans,
directors, and department chairs of MPA programs. On the survey questionnaire, MPA
programs in the U.S. are listed, and respondents rate the overall academic quality of these
programs on a one (marginal) to five (distinguished) scale. The result is the so-called
"top-50" list. The survey also contains a part that rate ten specialty areas, and information
and technology management is one of these areas. For this part, respondents are asked to
nominate the top programs for each area. Roughly ten or so top programs are listed under
each area in the published results.

To S1, S2, S3, S5, S8, S10, S13, and S14, the USNWR rankings play no role in their IT-related curriculum decision making. As S3 says, "We try to do a good job of what we do. We don't try to adjust our program to pursue a higher ranking in the USNWR." S10 indicates that his program pays attention to rankings as applicants do, but no action has been particularly taken just because of rankings that the program wouldn't otherwise undertake. With only one exception (S13's program), the above informants' programs either have a concentration or a required course in the core in the ITM area.

In contrast, three informants acknowledge the influence of USNWR rankings in their program decision-making. S11 believes that the USNWR ranking of specialty areas provide disincentives for MPA programs to be "mediocre" in areas that they cannot be top-10. Because the USNWR specialty rankings leave out all programs ranked less than 10, programs that are close to the top 10 are combined with those without any strength at all in the specialty area. To S11, the USNWR specialty rankings highlight the opportunity cost of investing in ITM curriculum versus other specialty areas in which the program might have a better chance to rank in the top 10. Consequently, USNWR rankings of specialty areas has encouraged S11's program to develop its own strengths and divert resources from the areas that are not in its strategic development plan--in S11's words, "[do] not do anything unless you can do it well for the specific field." This resource allocation strategy is manifested in faculty hiring decisions, and in turn it affects the in-house ITM capability in the program.

The general MPA rankings published by USNWR also affect S11's program's curriculum revisions. When asked if USNWR ranking influenced the curriculum decisions in the program, S11 responded that

Yes. . . . We look at USNWR rankings. We develop a strategy for trying to maximize our standing in those rankings. They are very important. Students pay a lot of attention to them.

Similarly, keeping high rankings, especially in the overall MPA rankings, is important to decision-makers in S9's program. According to S9,

We certainly would like to maintain the high ranking, and so that has an influence on how we go about dealing with this subject area, but I don't think in other ways. . . . most important is high ranking of the MPA program overall. That's really crucial to the reputation of the program and that of the college. And we have this very high ranking in this specialty area. . . . So, we really strive to have a well-rounded program, and most of the faculty would agree that having a focus on information and technology is part of a well-rounded program. If we didn't have that specialty focus, we'd be missing something.

Likewise, improving program ranking was also "one of the basic reasons" behind the last curriculum revision in S6's program. The program included an ITM concentration as a result of the revision.

S9 and S11's views both suggest their programs strive to do well in the USNWR rankings, but the means are different. S11's program tries to carve out strategic niches, thereby concentrating resources on promising areas, of which ITM is not considered one. In contrast, in S9's view, to maintain a high ranking in the general PA area, the program has to have a well-rounded program, of which ITM should be an important part.

In summary, USNWR rankings do not seem to influence decision making for the majority of informants' programs, and for those programs the rankings do influence, the responses differ. Thus, there does not seem to be much evidence that USNWR rankings have provided much pressure for homogenizing IT-related curricula.

Mimetic Processes

Institutionalists propose that "organizations that incorporate societally legitimated rationalized elements in their formal structures maximize their legitimacy and increase their resources and survival capabilities." (Meyer and Rowan 1977: 352) These "legitimated rationalized elements" or "institutional rules" share some "mythlike" properties of organizational structures. These elements start out being external to organizations, but are then become internalized and elaborated in the institutional environment, organizational decision makers become sensitive to them, and they thus become part of formal organizational structures.

To apply this lens to the study, the analysis focuses on informants' assessments about the state of IT-related education in MPA programs, and whether those assessments influence program decision-making in the direction of greater conformity.

Informants' Assessment About the State of IT-related Education in MPA Programs

As discussed in the second section of chapter 6, it is a shared consensus among informants that IT capabilities--broadly defined--are important, although they do not agree on the scope or depth of IT skills and knowledge that are essential for MPA students. The design of the interview includes an open-ended question to gauge the degree to which the commonly-perceived importance of IT capacity has permeated into MPA education and how widespread such permeation is. In the question, informants are asked to assess generally the current state of IT-related development they see among MPA curricula. Table 7-1 shows informants' volunteered answers.

Insert Table 7-1 about here

At one end of the continuum of informants' opinion is the general acknowledgment of the widespread application of IT in organizations (S1, S3, and S4). Narrowing down the scope of application to what is most relevant for MPA education, S11 specifies the domain--the public sector--in the comment "E-government is terribly important."

Zeroing in on IT influence directly on MPA education, S9 and S14 observe a general agreement on the importance of the ITM area for their own programs. S9 comments that

> This [ITM] is not a topic for us to be not paying attention to. I don't see that any where. I think there is a general acceptance that it's an important area to have built into your program in some useful way.

S4 and S10 also remark that ITM is an indispensable part of the program, just like other established PA subfields. For example, S4 states that

> We saw that this [ITM] was a new area we needed to respond to, and something that students would increasingly need, but also obviously because if we didn't we might well be left behind a bit, so there was an awareness, and this could also be a competitive issue as well as a matter of students.

However, there are also some counterviews. Based on experience serving on NASPAA's accreditation body, S6 observes that MPA programs in general show insufficient attention to ITM. Consistent with S6's observation, S9 finds strong ITM curricula tend to exist in big PA schools. In short, the general recognition of IT as an important subject area is not fully reflected in existing MPA curricula according to these informants.

Evolutionarily, S8 sees a greater interest in the role of IT now than a decade ago or earlier. S8 goes on to point out two major clusters of interests in this area: 1) how one

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manages what's happening with globalization, the role of IT, and how IT affects public policy, and 2) whether or not there should be a policy for IT. S8 says "some of the programs are looking into both or one of the two."

According to S11, another evolution with implications for IT-related curriculum is the transformation of some MPA programs into de facto MPP programs--that is, some programs' title remains "MPA," but their curricula have resembled a typical MPP curriculum. Further, S11 and S13 note that MPP programs typically do not consider ITM as a sub-field of PP, so that the incorporation of ITM education has taken place mostly in MPA programs. Taken together, these two trends suggest a reduced degree to which broadly-witnessed impact of IT has translated into curriculum influence on MPA programs.

Impact on Curriculum Decisions

A deterministic thesis derived from institutional theory would suggest if a decision maker in an MPA program perceives a particular curriculum development is prevalent among peer programs, the decision maker would try to incorporate this development. As Table 7-2 demonstrates, some informants' narratives do echo this prediction. However, the table also shows there are varied degrees to which an informant sees perceived curriculum developments influencing program decision-making. In other words, sensing an IT-related curricular development does not necessarily result in feeling pressured to conform to it.

Insert Table 7-2 about here

Five informants make some connection between their assessment of IT-related

developments and their programs' IT-related curriculum decisions. For S1, the result of the perceived pressure from the "pervasive" use of IT is to integrate IT-related topics into courses in the curriculum. For S4, the broad use of IT has influenced the presence of some IT-related components in S4's curriculum. Additionally, the "buzz and hype about IT" is one of the reasons behind S2's program's last major IT-related curriculum modification. When asked what had prompted his program to make the decision of including new ITM courses and a related concentration into the curriculum in the late 1990s, S2 answered that

> It would have been a compound of things. We were a new program. We thought this would be an excellent area. There was a lot of buzz and hype about IT, and . . . we were sort of developing as we went, identifying specializations that would be viable for us or something that we could do. Since we have people with technology background and interest, then we said "go for it."

Like S1, S4, and S2, S8 also observes increased interest among MPA programs in the role of IT in today's society; additionally, S8 wishes S8's program had the faculty resources to offer several specialty courses in the area of ITM and IT policy. In contrast, S10 considers S10's program as more of a trend setter, than a trend follower, in the ITM area. S10's program is influenced by leading MPA programs with a strong ITM curriculum, but the influence is limited to course content. The possibility that MPA programs influence each others' course content is also suggested by S7, who recalls being provided some syllabi and brochures from other universities' MPA programs as a guide for developing an ITM course.

In contrast to the above views, some informants perceive little influence from other MPA programs' IT-related curricula. For example, when S3 and S11 revise their IT-

related curricula, they try to know what is in the field, but they say that this external factor does not play a role in shaping their programs' curricula. Similarly, S6 and S14 both observe a trend in MPA programs towards more IT presence in the curriculum, but they say that their own independent assessment of the importance of IT, rather than the desire to follow the trend, motivates their IT-related curriculum decisions. S14 says: "We want to offer a curriculum that's directed toward preparing students for the professional work they are doing. We just see IT absolutely essential for students in their professional environment."

Other informants share a general perception that their curriculum decisions are entirely independent of what other programs are doing. For example, S2 remarks that the extent to which an MPA program chooses to infuse IT-related components into the curriculum is contingent on the program's own assessment about its resources and development strategies. This remark is consistent with S5 and S3's observation, which is that some programs are embracing ITM in their curriculum, but the other programs just do not think it is important. Consequently, in their views, there are varied models of curricular development, and ITM is not a universal component for all MPA programs.

Normative Pressures

In DiMaggio and Powell's conceptualization (1983), the normative mechanisms leading to institutional isomorphism stem primarily from professionalization, by which they mean the shaping of professions through the development and implementation of educational norms and standards. Applying this lens, we can ask whether any rule-based elements in the formal education offered by MPA programs leads to homogeneity in IT-related curricula across programs. To answer this question, I focus on three normative

elements: 1) core curriculum; 2) degree hours, as well as 3) the institutional home of the

program. The analysis herein examines how these potential sources of conformity

pressure unfold in MPA programs' IT curricular decision-making processes.

Core Hours/Courses Requirement

Informants' narratives predominantly show norms for the number of courses or

credits in the core curriculum tend to push decision makers away from the idea of having

a dedicated IT-related course in the core.[39] Adding a dedicated IT-related course into the

core usually forces decision makers to squeeze out a course already in the core, which is

a difficult decision because decision makers are reluctant to face pressures to justify it.

However, if a program is restructuring the entire core curriculum or expanding it, the

"opportunity cost" (S4's words) of elevating an IT-related course into the core becomes

less prominent. Consequently, the pressure on decision makers lessens, and a decision for

upgraded IT presence in the core is more likely (see also the section "The Role of Choice

Opportunities" in chapter 8).

For example, S10's program does not want to increase the number of core courses

or substitute an ITM course for any existing course in the core, because either of which

would entail a major overhaul of the curriculum, and S10 points out it "often is a lengthy

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[39] The only exception is S5's program, which has sixteen courses in the core, and an
ITM course is one of them. However, S5 did not feel the number of courses in the core
played any role in the decision of including the course in the core, which was made more
than two decades ago. I asked whether the course would be among the first courses to be
removed if the number of core courses was reduced, and his answer was a categorically
no.

process and only happens once every several years." Additionally, when asked about the absence of IT-related course in the core, S2 responded, "there is no room in the curriculum for another required course." When S2 learned that there were more than twenty MPA programs in the country that had an IT-related course in the core, he asked "what do they exclude?" Similarly, S4 states that ". . . the opportunity cost, in terms of what we have to exclude . . ." is one of the two major issues in the deliberation leading to the inclusion of an IT course in the core. In the same spirit, S11's program chose to list an ITM course with several other courses and require students to choose one of them to minimize choice opportunity costs:

> If you take all the NASPAA course requirements, in ethics and personnel and budgeting and financing . . . you add them all up, they exceed the number of credit hours that are available for a master's degree. Maybe if you had a 60 hour MPA, you could fit them all in, but you can't fit all those requirements together. So, program directors are faced with a choice--they can either offer just a little bit so these things are not really adequate, or alternatively they could offer these requirements as courses and do what we do, which is to say that students you've got to take some, but not all of those. . . . it's semi-required. . . . So, a student could select out of the courses to take, say, a budgeting course as opposed to an informatics course, but if we required everything, we had no room for a specialization.

To sum up, the majority of informants think rules and norms concerning the size of core curriculum force tradeoffs between courses in the restricted space allotted for course requirements. These tradeoffs tend to exert pressures to decision makers and in turn have the effect of homogenizing MPA programs away from introducing dedicated courses related to IT into the core curriculum.

Degree Requirement

The number of total credit hours or the number of courses required for the degree is not a prominent factor in informants' accounts of considerations behind their programs' IT-related curriculum decisions. Since the former varies widely across programs (see the first section in chapter 5), comparing the latter seems more meaningful. For example, S9, whose program requires students to take a total of 12 courses, remarks that the program has "a little less flexibility in introducing new course requirements with such a small number of courses in total that makes up the total requirement for the degree." Even so, S9's program has an ITM concentration and several courses.

Departmental Affiliation

MPA programs affiliate to different departments or schools. While some programs are part of a PA department or School, the other programs are housed in other departments (e.g., political science, criminal justice, urban planning) or research centers. A previous study finds that programs that affiliate to a department of political science tend to offer less advanced IT curriculum than those in a PA department or school (Kiel, 1986). S1's narrative below supports this point, and the reason is based on faculty homogeneity, which in S1's view would influence how easy it is to reach an agreement on curricular decisions:

> If you're asking whether the autonomy of offering an IT concentration is enhanced by being within a separate college as opposed to within a department of political science I would say yes absolutely, and the reason is if you are within a department of political science you need to have the entire department agree to the creation of an information technology concentration. I am not sure because of the heterogeneity of the department everyone would agree that's important within public administration program in which everyone is focused. As long as the [*sic*] public administration we would certainly recognize the importance and the need for an IT concentration.

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In contrast, the majority of other informants' do not feel that programs' departmental affiliations stand out as a crucial factor impacting programs' IT-related curriculum decisions. However, just as the faculty size variable discussed in chapter 6 may be taken for granted by informants who do not highlight it as a consideration underlying curricular decisions, departmental affiliation may be an unrecognized factor that matters. Especially for informants whose program is housed in a PA-focused institution, awareness about the role departmental affiliation actually plays would probably require a comparison, either with other programs or against a counter factual scenario where their program is part of a non-PA-focused institution.

For example, when asked about the major considerations behind the decision to include an IT-related concentration, S1 mentioned only faculty competencies and attracting more students, without touching upon the program's departmental affiliation. Nevertheless, when probed about the role departmental affiliation played in the decision making process of creating this concentration, S1 gave the aforementioned quote, which suggests potential disagreement among faculty on creating an IT concentration if the program were part of a non-PA department.

Level of Institutional Isomorphism

This section assesses the level of institutional isomorphism among MPA programs' IT-related curricula based on the views advocated by the theorists (e.g., DiMaggio and Powell, 1983; Berger and Luckmann, 1967; Tolbert, 1988; and Zucker, 1977) who develop a set of sequential stages to examine the processes of homogenization of organizational forms and practices. Tolbert and Zucker argue that this set of component

stages "suggests variability in levels of institutionalization" (1999: 175). Embodying this variability, the full spectrum of ways in which MPA programs infuse IT-related components into their curricula is evaluated in this section.

To deliver IT-related education to students, MPA programs infuse IT-related components into their curricula, and these components can take the form as concentration offerings, dedicated courses in the core curriculum, elective course offerings, or topics integrated into non-IT-focused courses. Conceivably, this wide array of potential components gives rise to various combinations of these components, and in turn suggests a low level of institutional isomorphism regarding IT-related curricula across programs, which is consistent with the evidence from multiple sources as presented below. First, since the potential sources of isomorphic pressure that might lead programs to adopt homogeneous IT-related curricula do not seem to exert enough pressure for conformity, as this chapter's first section presents, MPA programs appear to have heterogeneous curricula regarding IT.

Second, a perception shared by S2, S3, S5, S8, and S9 regarding diverse IT-related curricula existing in MPA programs reinforces the prediction of a low level of institutional isomorphism among MPA programs' IT-related curricula. For example, in S9's view, MPA programs share a general awareness about the importance of IT, but the resulting implementation does not converge to a single pattern:

> There are so many models out there. I don't think there is one best way to go about doing this, but there is a general sense that technology is an important thing to figure out how to do.

Last, the summary statistics from chapter 5 demonstrate that only 13.9% of the 187

programs require an IT-related course in the core, and 16.04% have a concentration in this area (see Table 5-3 in chapter 5). In other words, relatively few programs have pursued these two options as ways to infuse IT-related components into their curricula. This phenomenon not only provides yet another piece of evidence for a low-level institutional isomorphism, but also highlights the other two options' importance for IT-related curriculum development--embedding IT-related topics into non-IT-focused courses and offering elective courses in this area.

So far, I have not explored the degree to which programs might be homogenous or heterogeneous in their incorporation of IT-related topics into non-IT courses. Since all informants suggest their programs adopt this curricular element, it is important to gauge how alike programs are in implementing this curricular choice for the purpose of this section, which is to assess the level of institutional isomorphism regarding MPA programs' IT-related curricula.

MPA programs show a continuum in the extent to which IT-related topics are integrated into non-IT-focused courses in the curriculum. At one end of the continuum, some informants put great emphasis on embedding these components into courses, whether or not their curriculum has dedicated or required IT-related courses. For example, S5's program started requiring a course in ITM more than two decades ago, but this informant considers this requirement not sufficient enough. Therefore, S5 tries to make sure other courses are also covering ITM topics and students receive adequate exposure in IT-related knowledge and skills that they will need in their future job environment. Similarly, S14's program also requires an ITM course, and S14s program tries to embed IT and ITM into core courses. In contrast, S2's program does not have a

stand-alone IT-related course in the core, but S2 stresses the importance to "salt and pepper IT and IT skills in courses such that there is a lot of cross-course reinforcement of IT."

At the other end of the spectrum, a significant number of programs are still not showing much evidence in their efforts to integrate IT-related topics into their curricula, as observed by both S5 and S6. According to S6, who served on the accreditation body of NASPAA for several years,

> failure to explicitly meet that requirement [of integrating IT-related topics] in the core curriculum was the number one violation by schools that we accredited this year. Almost every program we looked at did not satisfactorily address that issue in their program.

Informants point to different ways that programs actually embed IT-related topics into courses. Conventional IT-related topics that are integrated into courses cover two major areas--one focuses mostly on technology, while the other emphasizes the management and policy issues related to using technology. In addition, some topics do not fit just one of these two dichotomous areas, because they are in the grey zone between these two areas.

To elaborate, the first area is computer applications that assist the word processing, spreadsheet, and presentation needs in management, and the applications often taught in this area are Microsoft Word, Excel, and PowerPoint. As students' average level of computing literacy has advanced, these applications have become less taught in classes. Increasingly, instructors see them as skills that are within students' own responsibility to acquire, and require students to use them in classes. In the event that students are not familiar with any of the required-to-use applications, there are often computing resources

on campus that students can turn to for help.

With the increase in internet use, some MPA programs (such as S11, S14, and S5's programs) have come to view website design and maintenance as essential skills related to computer applications that should be covered in curriculum, e.g., web development applications.[40]

Informants also highlight other software packages or tools. For example, S2, S3, S6, and S10 mention statistical packages (e.g., SPSS, SAS, and Stata) in decision analysis or statistics courses when touching upon the ITM components in their curricula. Additionally, S10 and S14 also pinpoint applications for database design, database management, information security, decision-making support, collaborative work system, planning, and dynamic modeling.

The second area programs often integrate into their curriculum is management and policy topics pertinent to using technology, broadly defined. This area has seen various implementation models with differences in the exact topics and ways of exposing students to these topics. For example, in S11's program, issues regarding informatics and the information age are integrated into a required entry-level survey course on the history and reform of public administration. Similarly, in S6's program, a core course on advanced management incorporates information management topics, while S2's program allocates one or two weeks out of fifteen weeks of a course on organizational theory to technology and technology uses as well as adoption and implementation processes. In

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[40] For example, Dreamweaver and Microsoft FrontPage.

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S2's view, this area is presented to students "more as sensitivity and introduction to the importance of IT for management and governance." Considering yet another model, S9's program embeds ITM issues in courses in two ways: 1) using "modules with cases or exercises to introduce students to some of the issues and problems associated with using IT to operate government programs or to do policy analysis," and 2) dedicating at least one-week to guest lectures on using information in decision making in a core course on politics and public policy.

Regarding the topics or tools in the grey area between the aforementioned two types of integrated components related to IT, applications for database management, collaborative work system, information security, and geographical information systems, for example, are also covered as parts of non-IT-focused courses. These applications require specialized technical skills to use, and understanding their implications for management and policy is essential to unleash their full potential and achieving organizational goals.

Turning in more details to factors influencing the degree to which programs infuse IT into regular course offerings, two major points emerge from informants' narratives. First, S14 expresses a common point shared by other informants: the extent to which IT-related skills and knowledge can be integrated into the curriculum depends on the skills of individual faculty members. This constraint may partially explain why S2 comments that this approach is hard to manage, even though S2 also thinks it is "the way to go" for his program given the fact that there is no room in the program's core curriculum for a course dedicated to IT related topics. In contrast, S9 regards including IT-related topic in core courses as ". . . very easy to do."

Second, some informants see an inverse relationship between a program's degree of integrating IT-related topics into courses and the level of student interests in the program's IT-related concentration. For example, according to S1: "… information technology or management of information systems … those kinds of concerns are more and more incorporated into the regular curriculum of the core courses, and students may not see a need to concentrate on that area." This is part of S1's explanation about why not many students in S1's program have claimed IT as their concentration. Similarly, S2 also expresses a view that sees integrating ITM elements into the non-IT courses more or less as a substitute for requiring a stand-alone ITM course: "We are sort of struggling here in terms of whether we offer one course that everybody has to take, or we integrate these sorts of skills into courses, or do we just make it purely elective." With opportunity costs in mind, S2's program decided to take the integration approach.

In sum, MPA programs appear to vary substantially in terms of the degree to which they integrate IT-related components into the curriculum, how they embed IT-related topics into courses, and the kinds of IT-related topics they choose to integrate. Additionally, how programs implement the integration approach is subject to the constraint of faculty literacy in IT and the related management and policy issues. With this level of uncertainty and diversity, MPA programs do not appear to have converged in institutionalizing the integration of IT-related topics into their curricula. In turn, given the prominence of the integration approach in most MPA programs' IT-related curriculum, along with the flexibility to offer or not offer dedicated courses or concentrations, this study finds a relatively low level of institutional isomorphism among MPA programs' IT-related curricula.

Summary

This chapter first focused on the potential sources of coercive mechanisms, mimetic processes, and normative pressures, which the institutional literature suggests would cause MPA programs to converge in their development of IT-related curriculum. Next, the analysis assesses the degree to which these pressures have translated into curricular isomorphism, particularly in terms of the extent to which programs have integrated IT-related topics or tools into non-IT-focused courses in the curriculum.

The evidence provides a mixed picture, with some programs feeling a degree of "conformity pressure" from one or more of the mechanisms mentioned, while the others feeling less pressure or no pressure at all to conform to external expectations, norms, or standards regarding their IT-related curriculum, largely because informants think their program would be meeting the expectations anyway in the absence of the outside pressure. This patchy response to external pressure leads to even less consistent implementation across programs regarding infusing IT and ITM into the curriculum, given the number of implementation options (dedicated courses, concentrations, core requirements, embedding into courses) and individual program resource constraints, such as the number of faculty with knowledge and skills related to IT. In short, this chapter points to the fact that some of the resource issues described in chapter 6 are sufficient to attenuate institutional tendencies to conform in the offering of IT-related curriculum.

As such, this chapter sheds new light on the way in which the forces described in the institutional literature actually play out in the case of IT-curricular development and implementation and interact with counter forces that lead to the more individualistic expression of curricular design across different programs.

Table 7-1: Assessments About the State of IT-related Education in MPA Programs

Assessment	Informant
There is broad use of IT in organizations.	S1, S3, S4
E-government is terribly important.	S11
ITM skills have been broadly recognized by MPA programs.	S9, S14
ITM is an integral part of MPA programs.	S4, S10
MPA curricula in general show a lack of attention in ITM.	S6
Strong ITM curricula tend to exist in big PA schools.	S9
Most programs are struggling on how to incorporate IT components into their curricula.	S2, S9
There are many implementation models.	S2, S3, S9
MPA programs are having a greater interest in technology management and policy.	S8
IT has become part of MPA but not MPP curriculum.	S11, S13

Table 7-2: **Connection Between Assessment of IT-related Curriculum Development Among MPA Programs and Conformity to It**

Connection between Assessment and Pressure to conform	Curriculum Features in Informant's Program		
	Having an ITM Concentra-tion	Having an ITM Course in the Core	Neither
Some Connection			
IT is so pervasive that we need to incorporate it in courses.	S1		
"Keeping up with the times would need to have some offering in this area."		S4	
The "buzz and hype about IT" in the late 1990s was the background of developing an IT concentration and several courses some years ago.	S2		
"There is a greater interest in the role of IT…. Are most of us interested in the area? Yes, … [but] we don't have the faculty to implement it."		S8	
We're influenced by the trend, but only at course content level, not the curriculum.	S10		
We look at other programs' course syllabi, outlines, and brochures when designing IT-related courses.			S7
No Connection			
We just looked at others' syllabi or curricula to know what others are doing.	S3		S11
"We didn't consider what the other programs were doing. We did what we thought was best for our program."	S6		
Our curriculum revision is internally driven, not because others think it's important or others are doing it.		S14	

Note:
1. Some informants in this table are from the same program.
2. Direct quotes are in quotation marks. Other contents in the left-most column are summaries of each informant's remarks.

CHAPTER EIGHT
IT-RELATED CURRICULUM DECISIONS FROM THE PERSPECTIVE OF GARBAGE CAN THEORY

Garbage can theory links decision elements by their simultaneity rather than their actual contents (Cohen et al., 1972; March & Olsen, 1983). It is fortuitous timing which leads to policy decisions by bringing together seemingly unrelated streams of problems, alternatives for solutions, and opportunities. According to the theory, policy situations are characterized by several features: 1) opportunities or occasions that open up windows for policy choices to emerge and be selected because of their symbolic meanings instead of their problem-solving potential, 2) ambiguities in meanings and processes, and 3) decision outcomes not followed up by ex post assessments which could be used to rationally inform future decision making. This chapter applies this lens to informant narratives to shed light on the degree to which garbage can theory offers insights into the processes and contexts of IT-related curricular decision making in MPA programs.

The next section of this chapter focuses on the elements in IT-related curricular decision-making processes that may involve symbolic meanings--in particular, on the extent to which curricular choices are decoupled from the need to solve problems, and on the assessments of IT-related curricular decisions. The following section examines the way ambiguities influence IT-related curricular decisions. The next section discusses the role of choice opportunities in MPA programs' IT-related curricular adaptation processes. The final section concludes the chapter.

The Symbolic Elements in IT-related Curricular Actions

From the garbage can theoretical perspective, the declaration of taking on an initiative for organizational change "symbolizes the possibility of effective leadership, and the belief in that possibility may be of greater significance than the execution of it." In the same vein, decision-making can be "a tactic for creating an illusion of progress where none exists" or "an alternative to action" (March & Olsen, 1983: 290). In this view, solving a problem is of less interest than making an impression that efforts are taken toward solving one. In the same light, to the extent that a decision satisfies the social expectation for leadership, decision makers and stakeholders may lose interest in following up on the real effects of the decision, because assessments would require a longer attention span than decision-makers caught up in symbolic decision-making are able to maintain.

Below I apply this lens to look at decision-making processes of IT-related curriculum change in MPA programs, specifically focusing on two manifestations of the kind of symbolism March and Olsen seem to have in mind. The first is the extent to which IT curricular "solutions" seem to be detached from "problems." The second is the degree to which programs review, or do not review, their IT-related curriculum for possible follow up.

Cohen, March, and Olsen see universities as an organizational environment in which decisions are often detached from problems:

> University decision making frequently does not resolve problems. Choices are often made by flight or oversight. University decision processes are sensitive to increases in load. Active decision makers and problems track one another

through a series of choices without appreciable progress in solving problems. Important choices are not likely to solve problems. (1972: 11)

S4's account of why S4's program offers multiple elective ITM courses seems to reflect this kind of decision environment. "I don't know if there is any central planning. I think various faculty wanted to teach things." But there is also evidence in informants' narratives reflecting the connection of curricular actions with problems. In S2's assessment, lower-than-expected student interest in the recently-added IT concentration and courses is perceived as a problem in S2's program, and S2's framing in the following seems to tightly connect this problem with potential solutions, which involve curriculum adjustments:

> It [the current IT specialization in the program] is not an attractive option by itself for students, and there is no room in the [core] curriculum for a specific IT course. So our options are clearly to integrate it [IT-related components] into the curriculum, and to broaden the specialization, so it becomes a more attractive package to the students.

As mentioned, the decoupling of "solutions" from problems and the simultaneity of decision elements are two of the major properties of organizational decision making posited by garbage can theory. These properties seem consistent with a lack of interest in ex post assessment of organizational decisions. Additionally, it would also seem possible for assessments to be made with vague intentions or objectives which produced limited information.

Turning to informants' narratives, some programs do not appear to have any formal or informal assessments specifically connected to IT-related curricula. The programs of S9, S13, S3, S7, and S4 fall into this category. When answering the question about

whether their program has assessed their IT-related curriculum, these informants alluded to the general or ongoing student evaluations, or general curriculum review that the faculty conducts regularly. Additionally, these programs typically do not have an explicit and clearly-defined objective for their IT-related curriculum components. For example, at the time S4's program was considering an IT-related curricular change, there was ". . . just a feeling that we needed to have some offering here to keep students up-to-date with some current development in the field, but that was about it."

In contrast, some informants elaborate on the objectives behind their programs' IT-related curricula in terms of the IT-related competencies they expect students to learn, and how well these objectives have been achieved. Although there may not be formal assessments for the curricular elements related to IT specifically, these well-spelled-out objectives seem to have oriented program faculty to judge how well the curriculum has facilitated students' acquisition of IT-related competencies.

For example, S5 articulates the three specific areas of IT-related competencies that the program expects students to learn, and the extent to which students have met the expectation through the IT-related offerings in the program. The first area is about basic technical skills. S5's assessment is that students pick them up without a problem. The second area, in S5's categorization, contains database management, spreadsheet, PowerPoint, Web use, downloading software, information security, information management, and appreciation for how to manage information to assist policy making. S5's thinks that the curriculum provides basic coverage of these topics, and that students have a "model and vision" with respect to these topics, but that the curriculum could be improved in this area. The third area involves information policy, law, privacy,

government records, and their interaction with technology. They are covered in a required course in the core, so S5 thinks that students have exposure to them. These topics are addressed more fully in an elective course that S5 teaches, so S5 feels that the pressure to cover all of them in the required course is lessened, and interested students can choose to deepen and widen their IT-related literacy by taking the elective course.

Instead of laying out the particular knowledge and skill sets that their programs expect students to learn through their IT-related curricula, some informants offer a general assessment of their IT-related curricula. For example, in S8's program, informal assessment indicates that the current program offering (a dedicated ITM course in the core) is "very adequate" in achieving the goal the program set out to achieve when it started requiring the course, which was that students should be able to be the pioneers of using IT in their work. Similarly, S10 feels "comfortable" with both the technical and managerial knowledge and skills that students acquire through the courses offered by S10's program and other same-campus academic units.

S2's program not only evaluates the performance of its IT-related concentration specifically, but also has the evaluation results feedback to the process for further curriculum adjustment. The program underwent a major curricular revision several years ago. By creating new concentrations (IT included), the program's objective was to better appeal to the market, that is, attract more students. S2 and a colleague are both interested in the outcome of the curricular revision, which in their assessment is not satisfactory in meeting the objective. Therefore, at the time of the interviews, the program's faculty were considering ways to modify the IT-related curriculum again. In this case, there is obviously a strong interest in assessing the outcome of the program's IT-related

curriculum modification, and there seems a tight means-end connection.

Like S2's program, S6's program also recently had a major curricular change that developed specializations, including one related to IT, for the first time in the program's history. During the interview, S6 said that the program was planning to have a formal exit interview to evaluate students' opinion of the curriculum, including their views about the newly created ITM concentration. In particular, S6 was interested in the views from the first student cohort after the curriculum adjustment.

To sum up, there seems to be relatively limited evidence from the informants' narratives to support the propositions of garbage can theory about the disconnect between problems and solutions, or a lack of interest in following up on decision outcomes. With a few exceptions, problems seem linked to solutions and ex post follow up of some sort, either as part of a more general curriculum review, or a more narrowly focused review on IT-related curriculum specifically.

Ambiguities in the IT-related Curricular Decision Environment

Garbage can theory sees policy-making contexts in which the definition of problems, potential policy alternatives, and decision rules are ambiguous. How participants elaborate, clarify, and define the problems, potential solutions, and decision principles, and how they contribute to the confusion or ambiguity of these decision-making elements, are of interest to the garbage can theorists. Below informants' narratives are assessed for evidence about potential ambiguities in two areas: the use of terminology, and the design of curriculum for delivering IT-related education.

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Ambiguities in Terminology

In the broad discourse on MPA curricula, the term "IT" conveys a range of ambiguous and not-always-consistent meanings. In particular, the term "IT" in the academic literature has been widely used to encompass both technical and managerial aspects.[41] Related terms, such as "e-government" and "digital government," have also been used with similar meaning.[42] In Bretschneider's words, "e-government" is "at its core, simply another information technology being adapted to governmental use" (2003: 738). Overall, the terms "IT," "ITM," "e-government," and "digital government" seem to have been used interchangeably in the discourse on IT-related education in MPA programs, so that "IT" takes on a broader scope than covering only the technical aspect.

Not surprisingly, these terminological patterns are reflected in informants' narratives and MPA programs' labeling of IT-related components in their curriculum. In particular, in the narratives of S2, S5, S6, S8, S9, and S11, the term "IT" sometimes includes not only "information technology" itself, but also related management and

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[41]   See, for example, Brown et al., 2000 and Dawes, 2004. In these two articles, the titles ("Graduate Education in Information Technology in the Public Sector: The Need and the Response" and "Training the IT-Savvy Public Manager: Priorities and Strategies for Public Management Education," respectively) leave out the word "management," but their content clearly includes management issues related to the use of IT in public sector when they refer to the IT knowledge and skills that they argue MPA programs should equip students with.

[42]   For example, Pavlichev (2004), Kim and Layne (2001), and Jennings (2002) use "e-government" as an encompassing term to refer to both IT- and ITM-related issues, such as the technical aspects of web development, the use of programming languages, database management, information systems design, GIS, e-commerce, theory and legal issues associated with e-government, digital divide, and electronic democracy.

policy issues, albeit with varying degrees of emphasis.[43] Additionally, a course in an informant's program is entitled "information technology," but it includes management and policy topics related to IT in its course content. Likewise, a concentration in another informant's program is also called "information technology," but the cluster of courses that the program offers for students to claim this concentration goes beyond technical applications to cover broader issues, such as technology management and innovation adoption.

S2 offers a distinct view on the scope of IT. According to S2, "IT has been considered to be a smaller issue and a subset of--in our place any way--science and technology policy and management in general." In this view, science and technology is a broader concept encompassing not only information technology, but also environmental technology, science and technology policy, and the management of technologies.

Ambiguities in the Design of IT-related Curriculum

In addition to ambiguities about terminology, the informants' narratives also suggest that IT-related curriculum design issues are not always clear. Specifically, there seems to be lack of clarity about two design aspects: the IT-related content that MPA programs should cover in their curriculum, and the format programs should use for delivering this content. In practice, these issues pose difficulties for programs' IT-related curricular development, as reflected in S9's comment that most of the MPA programs are

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[43] For example, S11 thinks that knowing the managerial issues about using IT is not as valuable as having the technical capabilities to tackle these issues.

"still struggling for a sustainable way to introduce and maintain IT in their programs."

This sense of uncertainty echoes the notion of "unclear technology" proposed by Cohen et al. to mean uncertain processes for achieving goals (1972:1).

Regarding course content, S11 points to the ambiguity about the boundaries of IT in the statement: "it is a new field where no one really knows what the field is, and what its boundaries and topics are." To illustrate, S4 would like to see digital democracy included in the curriculum, while S2 considers the boundaries of an IT-related curriculum too narrow for students to succeed in their future work environment if it leaves out technology-related topics, such as theories of technology processes, innovation, technology management, and technology's effects on behavior.

Informants' narratives generally suggest that within programs there is a balancing act between the managerial and the technical dimensions of IT-related education. This has been partially responsible for IT-related curricular modifications in S14's program, as explained below:

> I would say, literally in the last ten years, [we have been] trying to get it right. I'm not certain we've got there yet, but we've been exploring different ways, sometimes tipping more to skills, sometimes tipping more to policy and management.

In wrestling with the question "What IT-related knowledge and skills should the program teach?" S14's program has had a trial-and-error process. The program has changed the content of the course entitled "Information Technology" multiple times since it first appeared in the core curriculum. At first, the course was predominantly application-based, focusing on Microsoft Excel. Later, database management tools, such as Microsoft Access, were introduced into the course. The last modification was to

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include more policy and management content and to add more Web-based materials. S14 thinks that the central issue in the modification process is to find the right balance between IT skills and the knowledge to support decision making.

Although the evidence in informants' narratives are not sufficient to fully assess the degree to which definitional uncertainty about IT-related content is a collective phenomenon across all MPA programs, S6's opinion in the capacity of a former member on NASPAA's accreditation body reflects a broader view of the field:

> Many of them [faculty members in MPA programs to be accredited or re-accredited] just figure, well, if I use spreadsheets in my quantitative class, then that satisfies the requirement for information technology. Our comment was no, it's not; you've got a lot of areas you need to talk about, like information management, information policy, etc., that we want you to address in your curriculum.

This viewpoint seems consistent with independent academic scholarship in the field. Jennings (2002) also finds that "Many programs have interpreted this [incorporating e-government in the curriculum] to mean training students to be knowledgeable users of computers for data analysis and report preparation." (2002: 233) Additionally, Jennings mentions that some programs have covered data base management, and still others have tried to offer broader coverage of the management and use of information in organizations.

Turning to the delivery format for IT-related education, there are three uncertain issues: 1) whether a program should offer a stand-alone course related to IT; 2) if so, whether the course should be required or elective; and 3) how to integrate IT-related topics into courses in the curriculum that are not focused on IT or ITM. A sense of uncertainty about these issues is reflected in several comments from informants. For

example, S2 points out: "We are sort of struggling here in terms of whether we offer one course that everybody has to take, or we integrate these sorts of skills into courses, or do we just make it purely elective." Similarly, S11 indicates: "We all agree it [ITM] should be in the curriculum. It's just a question of how. This is particularly difficult." Likewise, in S4's account, one of the two major considerations when S4's program was considering including an IT course in the core was ". . . do we know what we are doing? I mean, do we know what we want the course to do, and if we know what we want to do, are we able to deliver it effectively?"

This kind of uncertainty was also reflected at a conference session I attended at the 2006 fall NASPAA conference. There I witnessed multiple participants raising questions about how to design IT-related curriculum. During the session, several participants shared their experiences in developing their IT-related curricula. From the garbage can theoretical perspective, these participants contribute to the discourse on IT-related curricula in MPA education by elaborating, defining, and clarifying their puzzles as well as potential implementation models.

As part of the discourse on IT-related curricular development, NASPAA lays out guidelines for implementing its IT standards for accreditation. Interestingly, these guidelines essentially state how not to interpret the standards, rather than giving clear directions concerning how to implement them:

> These area requirements do not prescribe specific courses. Neither do they imply that equal time should be spent on each area or that courses must all be offered by the public affairs, public policy or public administration programs. Nor should they be interpreted in a manner that might impede the development of special strengths in each program. (NASPAA 2006a: 9)

These guidelines suggest that MPA programs are not required to offer stand-alone courses related to IT; and, if they do offer a course, it does not have to be in the core curriculum. However, they do not offer much insight that would help clarify how to integrate IT-related topics into PA curriculum.

The Role of Choice Opportunities

In Cohen et al's garbage can model, choice opportunities are defined as "occasions when an organization is expected to produce behavior that can be called a decision," and these occasions are likened to garbage cans into which participants "dump" problems and solutions when they arise (1972: 3). Informants' narratives suggest that there are various kinds of occasions where streams of problems and solutions meet and result in IT-related curriculum decisions. In most cases that informants report, choice opportunities play a facilitating role for advancing IT-related curriculum development.

According to informants' narratives, one of the facilitating kinds of choice opportunities is furnished by curriculum revision periods. For example, in S4's program, an IT-related course was added as a result of the expansion of the core curriculum. Additionally, S9 suggests the possibility that this type of opportunity might arise in the near future in S9's program: "We haven't had a comprehensive curriculum discussion in quite some time …," but with a new top administrator at the school in which the program is housed, a conversation regarding curriculum revision is likely to take place soon, "so the topic [of modifying the ITM curriculum] will come up at that point."

On the other hand, if a program is not expanding the curriculum and other favorable choice opportunities do not otherwise arise, then the associated "lack of choice

opportunities" may constrain IT-related curriculum development. S2 and S10 find that

adding an IT-related course into the core curriculum would involve a major curricular

overhaul or replacing an existing course from the core, both of which, in their perception,

are difficult decisions within their programs. This perception reinforces the view of a

facilitating role of curricular expansion or restructuring opportunities in elevating an IT-

related course to the core curriculum.

However, S8's program exemplifies the notion that curricular revision

"opportunities" may not result in more advanced IT-related curricular development. The

program had an IT concentration more than a decade ago, but it was removed from the

curriculum because the faculty decided to remove all concentrations.

Early, formative periods in a program's development also present facilitating

choice opportunities for IT-related curriculum development. When asked what had

prompted them to develop an IT-related concentration, S2 answered

> It would have been a compound of things. We were a new program. We
> thought this [IT] would be an excellent area. There was a lot of buzz and hype
> about IT, and … we were sort of developing as we went, identifying
> specializations that would be viable for us, or something that we could do.
> Since we have people with technology background and interest, then we said
> 'go for it.' And, they said ** [the name of the director of the MPA program at
> that time] was interested, so there was an internal advocate.

Beyond the windows for choice opportunity presented by conscious periods of

program development or review, other events may fortuitously arise that represent

"choice opportunities" in the sense described by Cohen et al (1972). For example, when a

local organization expressed an interest in having its personnel take IT-related courses in

S1's program as part of a certificate program, the inquiry sparked interest among the

faculty to design IT courses to meet the request. The faculty hoped that after taking the IT-related courses, the new students would develop a further interest in taking other courses in the MPA program, thereby increasing enrollments. This local organization's inquiry and the resulting interest of the faculty, "rather than any foresight or deliberate attempt," in S1's account, lead to the creation of new IT courses and an IT concentration.

The development of IT-related curriculum at S6's program illustrates the wide variety of contexts around which choice opportunities can arise for the development of IT-related curriculum. In this program, several concurrent and seemingly coincidental events, rather than any purposeful calculation or plan, gave rise to the creation of an IT-related concentration.

The first event was the receipt of a recommendation from a campus-wide commission that the curriculum be reorganized to better accommodate the increasing use of technology in the global environment. During the resulting curriculum revision, creating new concentrations was on the table, according to S6. As a result, for the first time in the program's history, concentrations were officially offered.

Another factor in S6's program leading to the creation of an IT concentration was a project course that one faculty member had taught. This professor advocated the creation of the concentration on the basis of student interest in pursuing the subject of the course further.

A third event that helped bring about the IT-related concentration in S6's program was a NASPAA re-accreditation review, which required a self-study report to be submitted. In preparing the report, the program faculty reviewed the curriculum and came across the "IT standards," which require programs to include "information management,

technology applications, and policy" as one of the core curriculum components

(NASPAA 2006a: 9). In S6's account, "that caused us to look at our curriculum and see

what we're doing in it, and that also prompted the need to develop a specialization in that

area."

Summary

This chapter attempts to connect informants' narratives with several constructs of

garbage can theory, including the symbolic elements and ambiguities the theory posits as

inherent in organizational decision-making, as well as the role of choice opportunities in

MPA programs' processes of incorporating IT-related components into their curricula. In

so doing, the assessment distills several contextual factors that influence IT-related

decision processes.

In general, ambiguities about how to define "IT-related" components and how to

incorporate them into the curriculum play a big role in informants' narratives. As

information technology continues to evolve, so does the concept of "IT" in the context of

PA, and this fact affects informants perception of IT and their curriculum decision-

making about it. Some informants include management and policy elements in the IT

concept, while others adopt a more restrictive view. The difference in how curriculum

decision makers interpret "IT" is also reflected in the variation observed in IT-related

content across programs. Additionally, several informants suggest that a number of MPA

programs seem to be grappling with such questions as whether to offer stand-alone

courses, whether to require IT-related courses, and how to integrate IT-related topics to

other courses in the curriculum in designing their IT-related curriculum.

Overall, the evidence in informative narratives is more supportive of the importance of choice opportunities in IT-related curriculum decision-making than the proposition that "symbolic" elements play an important role. In terms of the later, informants' narratives generally suggest that curricular decisions tend to connect "problems" and "solutions," and that programs conduct ex post assessment to evaluate curriculum performance in various ways.

Choice opportunities are often instrumental in bringing about IT-related curricular decisions. Among the occasions that informants suggest to have facilitated IT-related curricular decisions include the initial period of a program's development, as well as its curriculum review periods subsequently. Also important are events external to the program, such as an outside organization's request that a program create IT courses for its employees to take; the recommendation from a university-wide commission to better incorporate IT into the curriculum; and the preparation of a self-study report during a NASPAA re-accreditation period.

CHAPTER NINE
IT-RELATED CURRICULUM DECISIONS FROM THE PERSPECTIVE OF THE DIFFUSION THEORY

Diffusion theory is useful for understanding the adoption and diffusion of innovative ideas and practices. Because IT-related components are relatively new compared to other curricular elements, this theoretical lens provides a perspective for studying the adoption and diffusion of such components.

In Rogers's diffusion theory, the widespread dissemination of an innovation hinges on its adoption by successful organizations, whose leadership is theorized to be instrumental in reducing potential adopters' reservations (Rogers, 2003). Observing such organizations' success reduces a sense of uncertainty associated with decision consequences, and in turn encourages adoption as a way to reproduce their success. Rogers theorizes that a "critical mass" is reached when enough late adopters join the adoption "bandwagon" (2003: 12). He proposes that the rate of adoption then increases overtime following an S-shaped curve, in which the X axis represents time and the Y axis represents the number of adopters.

The purpose of this chapter is to investigate if empirical evidence from informants' narratives comports with Roger's formulation of diffusion theory. The first section will examine when programs adopted IT curricular components, the particular components adopted, and the factors influencing the adoption. The second section attempts to assess the trajectory that the diffusion of curricular components has followed, and to see if a critical mass of MPA programs in the U.S. have adopted IT-related curricular components. The final section summarizes and concludes the analysis.

Temporal Factors in the Adoption of IT-related Curricular Components

Based on data gleaned from informants' narratives, Table 9-1 summarizes the temporal order of IT-related curricular events and the reasons for adopting IT-related curricular elements in the programs in the sample. These events involve two types of curricular elements: concentration offerings and stand-alone courses in the core curriculum. Among the eight programs in the sample, six of them are in the table, because each of them has at least one of these two elements. Below I first discuss the adoption of each of these two curricular components, followed by an examination of the mechanisms underlying the adoption decisions.

Insert Table 9-1 about here

Considering first the offering of IT-related concentrations, Table 9-1 shows that S1's program, which initiated a concentration in the late 1990s, is the earliest adopter among the programs in the sample. A few years later, S10's program offered an ITM concentration. A couple of years ago, S6's program began to offer a concentration on technology and IT policy; around the same time, however, S11's program decided to remove an IT-related concentration from its program brochure. S3's program has a concentration in the technology area, but it is unclear when it was first offered.

Programs in this sample lead to the conclusion that IT-related concentration offerings are relatively recent phenomena, starting to emerge less than a decade ago. There are not enough programs in the sample to gauge whether the concentration offerings have evolved from emphasizing the technical aspect to the managerial and policy dimensions related to using IT and technologies, albeit the sample seems to

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suggest so. In a larger sample, the pattern of evolution would be of interest for understanding the diffusion of IT-related content into MPA programs.

As to the dedicated courses focusing on IT or ITM in the core curriculum, Table 9-1 demonstrates that S5's program began to require a dedicated core course on information use in government in the early 1980s. About a decade later, S10's program included a similar course in the core curriculum. Additionally, S14's program began to require an IT course in the late 1990s. The time points of the diffusion of these courses into their curricula appear to be dispersed, and they do not seem to have had many followers.[44]

Two common elements are evident in the IT-related courses required in these three programs. The first commonality is that regardless of when the program first required the IT-related course in the core, the content of the offered courses has evolved in response to the rapid change of information technology and its organizational applications. Secondly, the evolution has featured the addition of information management as a topic to be covered in the courses. For example, S5's program recently added information technology management topics; similarly, the course in S10's program expanded its content to cover more computing tools and related issues, including web-based materials, and topics about using computer applications for database and information management, policy analysis, dynamic modeling, resource allocation, and planning. Likewise, the required IT course in S14's core curriculum course went through several adaptations in

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[44]   Twenty-six (26) programs now have a dedicated IT-related course in the core curriculum. See Table 5-3 in chapter 5.

course content, which evolved from a technology-centric focus to also including management and policy issues related to using technology.[45]

The temporal profile in Table 9-1 suggests that IT-related course requirements predated the provision of IT-related concentrations. Because the sample is just a small subset of the entire population and is not randomly selected, however, its generalizability to the entire population is questionable. The observed pattern does offer an interesting point of departure for future research.

Again returning to Rogers's view on the adoption and diffusion of innovations, he groups the roles of different participants into five categories: innovators, early adopters, the early majority, the late majority, and laggards. If we view as innovative MPA curriculum with either a dedicated course in the core or a concentration related to IT, then by Rogers's categorization, the 27.27% of programs (see Table 5-3 in chapter 5) that have one or both of these elements in their curriculum can be viewed as innovators or early adopters, and the 72.73% of programs that have neither will, at some point, fall into one of the other categories.

Interestingly, informants' perceptions about their own programs' positions in the diffusion spectrum just described are mixed, and do not necessarily accurately reflect their own positions. For example, both S3 and S6's programs have an IT-related concentration, but informants from these programs do not perceive their programs as leaders in the area among the pool of MPA programs in the U.S. In contrast, seven

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[45] The content evolution of this course is described in the section "Ambiguities in the IT-related Curricular Decision Environment" in chapter 8.

informants (S1, S2, S5, S8, S9, S10, and S14) from four programs perceive their programs as pioneers or leaders in IT-related curriculum among MPA programs. Among these four programs, two of them have an IT-related concentration, and three have a required ITM course in the core curriculum, with one having both.

Interestingly, among informants who do not regard their programs as leaders in the field, there does not seem to be a motivation to follow the lead of the programs with an advanced IT-related curriculum. For example, S3, S6, S11, and S13 say that ITM is not in their programs' strategic plan for development. This opinion seems to be widely shared. Instead of seeing IT-related curriculum in other programs as influential to the adoption of IT-related curricula in their own programs, informants identify three other forces they regard as more significant: 1) faculty influence or advocacy; 2) trend following with respect to the increasing use of IT in society in general, and public sector in particular--as opposed to curriculum development in other MPA programs; and 3) the implementation of curriculum perceived to enhance core competencies, development strategies, or market niche targeting.

In summary, the evidence does not support the view that the intention to lead in the realm of IT-related curriculum, or to follow the lead of early adopters or opinion leaders vis-à-vis IT-related curriculum, is the major driving force responsible for MPA programs' IT-related curriculum decisions. However, it should be pointed out that external influence in the form of collegial exchange about MPA curriculum may have some impact on program decision-making. Such exchange seems to occur among decision-makers in programs that already have relatively advanced IT-related curriculum. For example, S9, S10 and S14 exchange ideas with colleagues from top programs in ITM or other IT-

related academic disciplines. According to S10, the impact of such discussions is mostly on the course content level, as opposed to course or concentration offerings or requirements. S14 seeks advice from colleagues in other departments for designing the course content in the ITM area. Likewise, S9 looked at how the business school taught ITM when S9's program was developing the courses for the then newly-created ITM specialty in this informant's program.

The Trajectory of Adoption and IT-related Curriculum Diffusion

Based on diffusion theory, one might ask the following set of questions: What has been the diffusion trajectory of IT-related curricular components among MPA programs? Has a "critical mass" developed in the diffusion of these components? If so, when did the number of programs adopting IT-related curricular components start to take off? Unfortunately, empirical issues associated with the study of the topic itself and the data used to assess it prevent more than a suggestive answer to these questions.

First is the fact that the unit of measure--the concept of "IT-related curricular components"--is less concrete than more definable measures commonly used to gauge diffusion in conventional diffusion studies.[46] There are various IT-related curricular components (concentration offerings, required courses in the core, integrated topics into non-IT-focused courses, etc.) and components have their own variations (e.g., different

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[46] For example, computers, family planning methods, instructional techniques, new products, and so forth. See Rogers, 2003: 44-45.

IT-related concentrations, different courses in the core, different topics embedded in different courses, etc.) This variation makes it hard to define a unit of measure by which to judge the diffusion of IT-related curriculum.

Second, with a sample of eight non-randomly-selected programs, the information content of the data is not high enough to make for comfortable generalization, while the more adequately-sized sample from chapter 5 lacks the longitudinal data for deriving a precise trajectory.

Although there is not enough information to accurately describe the overall trajectory of the adoption and diffusion of IT-related curricular elements among MPA programs in the U.S., we can extract information from informants' narratives about their own programs, and make inter-program comparisons among them. Doing so, it is evident that programs have followed different developmental paths in their adoption of IT-related curriculum components. This difference is embodied by the varied time frames of their decisions to incorporate an IT-related concentration or to require a dedicated course in the core, as illustrated in Table 9-1. Additionally, however, it is evident that the decisions to adopt a course versus a concentration are conducted relatively independent from each other.

For example, S5's program has had a stand-alone ITM course in its core curriculum since the very beginning of the program (more than two decades ago), but it has not had an IT-related concentration. On the other hand, S10's program has required a dedicated course on ITM in the core curriculum relatively early compared with other programs (since the early 1990s), but the program did not include an ITM concentration until a decade later. S11's program had an IT-related concentration listed in the program

brochure until recently, and the program never really required a dedicated IT-related course. S1's program added an IT-related concentration relatively recently, but informants suggest that they will not offer a required and dedicated IT-related course into the curriculum

With this degree of diversity in programs' adoption paths, it becomes complicated to empirically approach the "critical mass" construct. "Critical mass of what?" is the question that comes to mind in view of the diversity witnessed. In addition, in S9's assessment, more programs now are recognizing the importance of IT-related knowledge and skills, but these programs are not necessarily translating this recognition into IT-related curricular actions. Moreover, both S9 and S11 observe that MPA programs are lagging behind MBA programs in their offerings of IT-related curriculum.

Summary

This chapter examines how the lens of diffusion theory offers perspective for assessing the adoption and diffusion processes of IT-related curricular components in MPA programs. Informants' narratives reveal that some programs started to infuse significant IT-related elements into their curriculum as early as the early 1990s, or even the 1980s, and that requiring IT-related courses in the curriculum predates the delivery of concentrations. The reasons informants give for adopting IT-related curriculum do not really comport with the diffusion theory formulation, however. Instead of following the lead of "successful" MPA programs, informants pinpoint three major reasons behind the adoption of their IT-related curricula: 1) faculty influence or advocacy; 2) the response of programs to broader IT trends in society, rather than curricular trends in MPA programs

specifically; and 3) the perception of the faculty's core competencies and program's development strategies. These mechanisms suggest that curricular decisions were more internally-driven than driven by imitation of other institutions' program offerings. If external leadership influence can account for the diffusion of ITM curricular components into MPA programs, it would be from other organizations in the larger social environment, which increasingly emphasize IT use in their operations and management.

The overall trajectory of IT-related curriculum adoption and diffusion into U.S. MPA programs could not be fully documented in this study, both because a "unit of IT diffusion" is hard to define, and because the panel data needed for this assessment was not available. However, informants' narratives were instructive in highlighting the diverse pathways programs follow in their adoption of IT-related curricular components. Informants also revealed the not-expected result that the diffusion of concentrations and that of dedicated IT-related requirements appear to occur independently.

Table 9-1: Temporal Order of IT-related Curricular Events and Mechanisms of Adoption

	Early 1980s	Early 1990s	Late 1990s	Early 2000s	Mid 2000s
IT-related Concentration				S1's program created an IT concentration#$	S6's program created a technology and IT policy concentration*
				S10's program created an ITM concentration*	S11's program unlisted an ITM concentration$
IT-related Course in Core	S5's program started requiring a course on using information systems in the public sector*	S10's program started requiring a course on using computers in public organizations*	S14's program started requiring a course on IT, which later evolved into more ITM-focused#		

Reasons for Adoption:

*: Faculty influence

#: Response to generalized IT trends

$: Response to strategic development goal

CHAPTER TEN
CONCLUSION

This dissertation sets out to explain the adoption and diffusion of IT-related curricula among MPA programs. By using different sets of data and methods and a mix of lenses from the organizational theory literature, the two empirical studies in this dissertation yield multi-dimensional insights to illuminate the processes and contexts of IT-related curricular decision-making. The first empirical study (chapter 5) uses a large-N sample and probit and Tobit regression analyses to explain the variation in core curriculum and concentration offerings related to ITM in MPA curricula. Hypotheses are derived from resource dependence and institutional theories and tested to ascertain the direction and strengths of the effects of different program characteristics on dependent variable proxy measures for the degree of ITM curricular adoption in MPA programs. The second empirical study (chapters 6 to 9) draws on resource dependence theory, institutional theory, garbage can theory, and diffusion theory to derive a more detailed and nuanced perspective from the narratives of 14 in-depth interviews. The second study complements the first one by fleshing out the connections between variables explored in the first study and providing a coherent and holistic picture of IT-related decision making.

Below I review the major findings of the dissertation, and provide a synthesis of the results. Second, I discuss the academic contribution of the dissertation research. Third, I discuss the practical implications of the work for MPA curriculum design, and for NASPAA accreditation. Lastly, I discuss the limitations of the work, and offer some suggestions for future research.

Summary of Results

IT and ITM seem to have selectively taken root in PA curricula, as reflected in the differential adoption of IT-related elements among MPA programs. Like other traditional PA subfields, such as public finance or human resources management, IT-related subjects now appear in programs' concentrations lists and core course listings. Based on the quantitative data collected for the first empirical study of this dissertation, close to 14% of MPA programs in the United States now require a stand-alone course on ITM in their core curriculum, and 16% of programs have ITM concentration offerings. Less than 3% of programs have both stand-alone courses and ITM concentration offerings, and about 73% of programs have neither of these curricular elements.

Based on these statistics, it does not seem that MPA programs have reached a tipping point yielding to widespread diffusion of IT-related curricular components. This impression is reinforced if we recall the results from chapter 9, which show that as early as two decades ago some programs had started requiring IT-related courses, and yet a bandwagon effect--a majority of programs adopting either of aforementioned curricular elements, for example--does not seem to have happened. In fact, as evidenced from the second empirical study of the dissertation, even some MPA programs housed in large PA schools are struggling in designing their IT-related curriculum. In other words, the existence of the MPA programs that are leaders in advanced IT-related curriculum development has not stimulated wide-spread imitation and further adoption.

The quantitative dimension of IT-related curricular diffusion may in some ways seem stagnant over the past twenty years, but the qualitative aspect has changed significantly in the same period. The first section of chapter 5 shows that the major

curricular content of IT-related MPA education has evolved from basic "computer literacy" on technical computing and software applications to substantive courses addressing managerial and policy issues reflecting the growing use of IT in organizations. As a manifestation of this evolution, the stand-alone ITM courses that the 14% of programs require in their core curriculum show a clear convergence in MIS and information resources management. However, the ITM concentrations that 16% of programs now offer seem a bit more diverse, including not only MIS, but also science and technology policy. Nevertheless, like the required ITM courses, these concentration offerings are developing toward a more deeply intertwined connection between IT and public management.

With the preceding as background, we now turn to a crucial question the dissertation has tried to answer: What are the driving forces at the program level that influence IT-related curricular decisions? The probit and Tobit regression analyses from the second and third sections of chapter 5 provide statistically significant results for three of the hypotheses proposed in the first section of chapter 4, which link faculty size, overall program ranking, and accreditation status to ITM curricular development in MPA programs. Specifically, faculty size and program's overall ranking are positively associated with ITM concentration offerings; additionally, faculty size and accreditation status show positive relationship with the degree to which programs require ITM curricular in their cores--greater faculty size increases the expected percentage of required ITM courses to total program degree hours; likewise, NASPAA accreditation is associated with a greater degree of core ITM requirements.

In chapter 5, we see that faculty size is the only explanatory variable that appears to

significantly influence both of the two outcome variables--whether there is an ITM concentration and the percentage of required ITM credits in total credit hours for the degree. Chapter 6 provides more detail about how faculty size influences IT-related curricular decisions, but there does not seem a universal size that has a deterministic effect on IT-related curricular decisions. Chapters 6 to 9 further assess the ways in which the faculty factor plays out in the decision processes related to IT curriculum. Multiple strands of evidence from these chapters suggest that collectively, faculty is the most influential group on IT-related curricular decision making; and, individually, faculty members' advocacy accounts for the most important driving force for the adoption of IT-related curricular components in several programs in the sample. Other important dimensions related to faculty include the number of faculty members in the program who have a research or teaching interest in IT or ITM and the core competencies of the entire MPA faculty. Related to the faculty factor, a challenge is highlighted by several informants: recruiting and retaining faculty members who are well balanced between technical skills, on the one hand, and knowledge on the policy and management implications of using technologies, on the other.

Chapter 6 not only analyzes faculty's influence on IT-related curricular decision processes, but also examines the roles of students, university administrators, potential employers of MPA graduates, and alumni. These stakeholders show different degrees of involvement in MPA programs' IT-related curricular decision processes in terms of how formal, regular, active, and influential the involvement is.

Chapter 6 also uses inductive reasoning to glean four major issues that are central in key decision makers' enactment processes regarding IT-related decisions, and there are

differences as to how each of these issues are framed in informants' minds. For example, informants do not agree on the scope or depth of the skills and knowledge that MPA programs should offer to students; neither do they show consensus on how essential it is for these programs to offer in-house IT-related education to MPA students. Likewise, programs show varied levels of interest in developing IT-related areas as their strengths, and hence in related resource allocation. Lastly, informants have different views on the IT-related courses offered by other campus units in relation to similar courses offered by public administration faculty. Some informants feel more strongly than others that the latter have unique perspectives regarding IT use in organizations, and so IT-related courses offered by other departments are not substitutes for such courses offered by MPA faculty.

In addition, chapter 6 also sorts out five major dimensions along which MPA programs' collaboration arrangement with other IT-related campus units differs: the degree to which the collaboration is institutionalized, the scope of the collaboration, the content of the collaboration, the degree to which an MPA program is engaged in shaping the IT-related courses the program delegates other campus units to offer, and the space in the MPA curriculum for students to take outside courses. These dimensions help stimulate MPA programs to think about how to offer more IT-related educational resources for interested students than in-house faculty can afford.

Chapter 7 assesses the influence of coercive, mimetic, and normative pressures deducted from the institutional literature as potential forces causing MPA programs to converge in their development of IT-related curriculum. The results are diverse with respect to programs' conformity to these pressures. This mixed response to external

pressure and the number of implementation options (e.g., embedding IT-related topics into courses or offering dedicated courses, concentrations, or core requirements) as well as individual program's own resource constraints (e.g., in the number of faculty with knowledge and skills related to IT) are generally not consistent with the view posited in institutional theory that institutions should converge to an isomorphic design across programs regarding IT-related elements in the curriculum.

A major finding from chapter 8 is that ambiguities about how to define "IT-related" components and how to incorporate them into the curriculum influence MPA programs' IT-related curriculum design. Another important finding is that choice opportunities are often instrumental in bringing about IT-related curricular decisions. Among the occasions that informants suggest to have facilitated IT-related curricular decisions include the initial period of a program's development, as well as its curriculum review periods subsequently. Also important are events external to the program, such as an outside organization's request that a program create IT courses for its employees; the recommendation from a university-wide commission to better incorporate IT into the curriculum; and the preparation of a self-study report during a NASPAA re-accreditation period.

Chapter 9 finds that the adoption and diffusion of IT-related curriculum elements appear to be more internally-driven than influenced by imitation of leading MPA programs. Informants suggest that if there is external influence, it would be mainly from other organizations in the larger social environment, which increasingly emphasize IT use in their operations and management. Chapter 9 also finds that the offerings of IT-related concentrations seem to have lagged behind some programs' requirement of an IT-related

course, which started two decades ago. However, this dissertation research is not based on the panel data needed to fully assess the trajectory of IT-related curriculum adoption and diffusion into U.S. MPA programs. Informants' narratives, though, did shed lights on the independent pathways in which individual program seems to have followed in the adoption of different IT-related curricular components.

Synthesis of Findings

In-depth interview data examined in chapters 6 to 9 show that informants usually see multiple reasons behind their programs' IT-related curricular decision making, but among these reasons, there is often an order of their relative importance in each informant's mind. Among the number-one reasons that informants give, faculty advocacy or influence, program development strategies, and programs' responses to the trends of using IT in society are the major driving forces of MPA programs' IT-related curricular decisions. In short, faculty is important, but also a part of a complex network of factors that influences MPA programs' implementation of IT-related education.

This network of factors has elements of uncertainty and ambiguity, as well as constraints and opportunities associated with the resource and institutional environments. How decision makers make sense of their environment by framing or enacting decision issues relevant to them affects their IT-related decision outcome, which in turn, can lead to diverse IT-related curriculum designs. In short, critical for understanding why programs implement differentiated IT-related education is studying how this complex network of factors unfolds in decision makers' enactment processes of issues important to them.

As chapter 6 describes, four major enactment issues emerge in informants'

narratives: 1) a normative judgment about the IT-related competencies that MPA students

should learn; 2) the role of IT-related components in MPA education; 3) the program's

own development strategy; and 4) the role that other campus units can play in providing

IT-related education to students. Below I discuss how these issues can be used as a

framework to synthesize and bring together the complex network of factors discussed in

chapters 5 to 9, and how considerations regarding these issues lead to different designs of

IT-related curriculum in MPA programs.

First, informants' narratives reveal diverse normative judgments about the scope

and depth of IT-related competencies that MPA students should learn. These differences

of opinions partially reflect ambiguities in the IT-related decision environment, which

revolves around how to define the IT-related topics important for students to learn. In

striking a balance between technical skills and IT-related management and policy issues,

programs show cross-sectional difference in the content of their IT-related curriculum

design. Viewed from a temporal perspective, there has been a shift over time in the

balance between technical dimensions and the managerial aspect of IT-related

knowledge, with MPA programs emphasizing ITM relatively more in recent years.

Second, perspectives about the appropriate role of IT-related components in MPA

education reflect decision makers' beliefs about the degree of emphasis IT-related

components should have in MPA curriculum, and the role the MPA program should play

for students' acquisition of IT-related competencies. To the extent that the education of

generalist public managers--as opposed to specialist CIO's--is the goal of the MPA

program, the program will provide less advanced IT-related curriculum than otherwise.

In decision makers' consideration of these topics, potential pressures from the resource or institutional environment can kick in, pushing programs to conform to expectations, preferences, standards, or norms imposed by internal or external stakeholders--for example, to imitate leading programs' curriculum, or to respond to the trend of broader IT use in society. NASPAA's accreditation standards are an example of this kind of potential pressure. However, programs show different degrees of conformity to such pressures, partly because some of the resource issues described in chapter 6 are sufficient to attenuate them, and other issues, such as those to be discussed below, may be more influential. Notwithstanding, how decision makers actually respond to these potential pressures influences the outcome of IT-related curricular decisions.

Third, programs' development strategies influence decision outcomes. Such strategies are associated with perceptions of faculty core competencies; the niche areas chosen for program development and specialization; and resource allocation strategies more generally. Programs will be most likely to think about allocating faculty resources and curricular space to ITM if a program's decision makers perceive ITM has the potential to be a program's area of strength, as measured by comparison to peer programs, ranking institutions, or students who can be potentially attracted to enroll in the program. If resources are committed and the program develops a reputation in ITM, resource commitments in the ITM area will become self-sustaining. On the other hand, to the degree that the commitment to ITM does not yield the expected outcome, program decision makers may change their strategic plans and choose to devote their limited resources to other program areas.

Fourth, how decision makers consider the IT-related course offerings available

from other same-campus academic units is also in the framing map that shapes the design of in-house IT-related curricular offerings in an MPA program. To the extent that (1) outside-program resources are accessible to MPA students, (2) the MPA program is short on in-house faculty who are competent to offer specialized IT-related courses, and (3) decision makers feel outside course offerings can reasonably substitute for in-house counterparts, then decision makers will be more likely to divert resources to non IT-related areas and to rely on other academic units on campus to offer IT-related curriculum.

Together, this complex network of factors and enactment processes interweave to influence diverse outcomes for IT-related curricular design. Adding to the complex conditions influencing such decision-making are the diverse options available for curricular design--dedicated courses; concentration offerings; core ITM requirements; embedding topics in non-IT-focused courses; collaborating with other campus units, and so forth--and various combinations of these options. In the way that the same environmental factor can be perceived differently by different stakeholders, some stakeholders perceive diverse curricular design options as creating ambiguity; for others, these options mean flexibility and opportunity for diverse IT-related curricular design.

Contribution

This dissertation offers fundamentally new insight about the adoption and diffusion of IT-related curricula among MPA programs. Of particular note is the use of original data; the additional perspective provided from the use of multiple theoretical lenses for assessment; and the strategy of using complementary empirical studies based on different

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methods and different data sets. Beyond the additional insight provided on the topic of this dissertation, this mix of the methods and theoretical perspectives offers a general framework for studying the adoption and diffusion of innovative practices or ideas in academic programs, because the analytical techniques and theoretical constructs employed are not context-specific.

By applying four different theoretical lenses to original data, the dissertation overcomes the limitations inherent in using a single perspective for data analysis and interpretation. As an example, the temporal dimension of curriculum diffusion and adoption would have been missed without the diffusion theoretical perspective. Taking advantage of the insights each theory has to offer helps uncover the complex factors that influence IT-related curricular decision making, offering a well-rounded and holistic picture of the curricular adoption and diffusion process. This approach is particularly useful for analyzing cases with diverse resource and institutional situations and decision outcomes.

The empirical results of this dissertation also offer insight more generally about the applicability and utility of the four theoretical lenses used in the analyses, with implications for further theoretical development in academic literature, and future empirical research.

Implications

This dissertation has implications for MPA programs and their accreditation body NASPAA, and possibly for a wider academic community. For MPA programs, particularly those considering how to design an IT-related curriculum, knowing the state

of the art from the aggregate statistics in the first section of chapter 5 and the evolution of IT-related curriculum observed in chapter 9 provides useful context and information to help decision-makers consider curricular design options. The options include the in-house curricular design options mentioned before, collaborations with other campus units as described in the second section of chapter 6, and various ways of embedding IT-related content into courses in the curriculum as detailed in the second section of chapter 7.

This study will help decision-makers in MPA programs see the big picture with respect to IT-related curricular trends and decision-making, which may prove useful for assessments or re-assessment of their own program's IT-related curricular goals and strategies. As just one example of contextual perspective that could be relevant, informants' narratives in chapter 6 suggest that large programs, as well as smaller ones, are faced with the challenge of recruiting and retaining qualified ITM faculty members who have a good balance between technical skills and knowledge about technology policy and management. As another example, chapter 7 shows that programs' responses to potential pressures imposed by norms or external groups' expectations or standards regarding IT-related curricular design are quite diverse.

The dissertation also has implications for NASPAA's curricular standards in general, and IT standards in particular. The role of NASPAA to influence MPA programs' curricular design through its IT standards has not seemed to have been significant to date, according to a number of informants' narratives. Informants from some programs see the standards as validating what their programs would have wanted to do anyway even if there were not these standards; other informants regard their ITM curricula as being ahead of NASPAA's IT standards; still others consider the standards

hard to implement due to the difficulty in recruiting and retaining qualified faculty in the IT-related area and the need to meet all the curricular requirements for accreditation within a reasonable space of degree hours. It is unclear whether these views imply that NASPAA's curricular or IT standards need to be updated or reviewed. In any event, because NASPAA is currently revising its accreditation standards and the new standards are scheduled to be released in 2009, this study is timely for informing policy makers about the state of IT-related curricular development in MPA programs.

Stepping back from the context for which this dissertation has clear implications, one can find that its methodology is potentially relevant for the assessment of curricular development in other disciplines, or for a wider scholarship on the adoption and diffusion of innovative practices or ideas. In fact, diffusion studies have been conducted in a variety of disciplines, and this dissertation can be seen as a part of a stream of research on innovation adoption and diffusion.

Limitations and Future Research

This dissertation has increased our understanding about the adoption and diffusion of the IT-related curricular components in MPA programs. As with any research, however, there are some limitations. This section discusses some of those limitations, and also specifies what this dissertation research did not find to avoid over generalization or misinterpretation. Potential directions for future research are also indicated.

The first limitation is that the data contained in the two empirical studies do not have a well-enough specified temporal profile to uncover the dynamic processes related to the curricular diffusion of IT into MPA programs. The temporal order found in chapter

9 appears that requiring IT-related courses predated the provision of IT-related concentrations. Whether this pattern would hold up in a larger sample is a point for future research. A panel data set would be needed for a complete assessment. Moreover, future research can also compare MPA with degree programs in other disciplines (e.g., MBA, instructional technology, etc.) regarding their IT-related curricular components to find out if they share similar developmental trajectories in the diffusion of IT-related curricula across programs.

With the dynamics of the past diffusion process not fully understood, it is also not clear what to expect in the future. For example, while data from chapter 5 suggest that ITM has been developing in some MPA programs, there seem to be co-developing counter trends; specifically, an evolution of MPA curriculum toward MPP curriculum, which often exclude ITM. It is also unclear whether the rapidly evolving IT landscape in the larger society, and in particular, the increasing scope and depth of IT use in the public sector, will impact future curricular development in MPA programs differently than in the past. For example, MIS and information resources management have been widely adopted among the 26 MPA programs that offer a stand-alone course related to ITM (discussed in chapter 5), but will such courses diffuse into more MPA core curricula and become established as standard MPA requirement? Or will their penetration be confined within programs with some unique niche characteristics or market target? These questions will require data beyond evidence for this dissertation and future research to answer.

Over time, ITM as a subfield of the academic field of PA has been defining and re-defining its boundaries, and IT applications in PA practice have been changing in scope

and depth. Assessing organizational behavioral responses to IT's influence in the modern world and, in particular, understanding the ways academic programs adapt and change to reflect technology and policy trends, should remain interesting research subjects far into the future.

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APPENDICES

Appendix A: Degree Titles of MPA Programs included in the Sample for Chapter 5

Degree Titles	# of Programs
Master of/in Public Administration	162
Master of/in Public Affairs	
Master of Public Management	
Master of Public Service (& Administration)	
Master of Government Administration	
Master of Public Administration: Health Administration	
Master of Science in Public Administration	
Master of Public Policy and Administration	
Master of Arts in Public Policy and Management	
Master of Science in International Health Policy & Mgt	
MPA in Public & Nonprofit Management & Policy	
Master of Science in Urban Policy Analysis & Management	
Master of Science in Education-Higher Education Administration & Policy	
Master of Science in Public Policy and Management	
Master of Public Affairs & Politics	
Key Executive MPA	
Master of Public Policy	21
Master of Science in Public Policy	
Master of Arts in Public Policy	
(Defense-Focused) Master of Business Administration	3
Master of Business Administration for Business, Government, and Not-for-profit Management	
Master in City Planning	1
Sum	187

Appendix B: IRB Approval

INDIANA UNIVERSITY

OFFICE OF THE
VICE PRESIDENT
FOR RESEARCH

NOTICE OF APPROVAL
EXEMPT REVIEW

TO: Shu-Chuan Chiu   **DATE:** January 11, 2006
      SPEA

FROM: Human Subjects Risk Compliance

RE: Protocol entitled: The Diffusion of Information Technology into Master of Public Administration Programs: Multiple Theroretical Perspectives
Protocol #: 05-10632

Approval Date: January 11, 2006

The Human Subjects Committee (HSC) has reviewed and approved the research protocol referenced above as exempt; §46.101b, ¶#2. As the principal investigator of this study you assume the following reporting responsibilities:

AMENDMENTS: Investigators are required to report on these forms **ANY** changes to the research study (such as design, procedures, study information sheet/consent form, or subject population, including size). An amendment form is attached for your future use. **The new procedure may not be initiated until HSC approval has been given.**

AUDIT OR INSPECTION REPORTS: Investigators are required to provide to the HSC a copy of any audit or inspection reports or findings issued to them by regulatory agencies, cooperative research groups, contract research organizations, the sponsor, or the funding agency.

COMPLETION: Approximately one month after the date you indicated your study will end, we will send a notice to you at the address on your application, requesting information on the current status of your study. You are required to complete and return that form. If this is a student project and we don't hear from you, we will send a notice to your faculty sponsor. If we do not receive any response we will consider the study as ended and change our files to show that. It is your responsibility to let the HSC office know of address changes and project date changes.

STUDY INFORMATION SHEET: All subjects should be given a copy of **the stamped approved** study information sheet.

We suggest you keep this letter with your copy of the approved protocol. Please refer to the exact project title and protocol number in any future correspondence with our office. All correspondence must be typed.

Enclosures: Documentation of Review and Approval
           Amendment Form
           Approved Study Information Sheet - **stamped copy must be used**

Federal Wide Assurance #FWA00003544-IRB00000222
For additional FWA information, see the Web site at http://www.iupui.edu/~resgrad/spon/fwa.htm

BLOOMINGTON CAMPUS
COMMITTEE FOR THE
PROTECTION OF
HUMAN SUBJECTS

Location:
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Carmichael Center L03
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edu/rschcomp/hmpg.html

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Appendix C: Email for Recruiting Subjects

Dear Sir or Madam:

I am writing to you about an interview I wish you will agree to participate for a dissertation research I am conducting at Indiana University-Bloomington. The purpose of the interview is to approach the process in which MPA programs adapt their curricula in response to the development of information technology across different sectors. Participation in this interview is voluntary. You may choose not to be interviewed, but I sincerely invite you to participate in this research to help inform the processes I wish to shed light to by comparing eight different cases from multiple theoretical perspectives, including garbage can theory and theories from the literature on the diffusion of innovations.

Although you will not benefit directly from participating in the research, you will help promote the discussion about the IT component in MPA curricula and facilitate the connection between such discussion and the aforementioned theories. I do not think that my questions pose any risk to you or your institution. Nevertheless, the responses you give will be kept confidential. With your approval, the interviews will be audio-recorded. Completed interviews will be transcribed and tracked by an identification number, both of which will be stored on my personal computer and an external hard drive that only I have access. The link between the ID number and your name, title, affiliation will be stored separately from the transcripts, and then destroyed by August 31, 2010. No one other than me and my transcriber will be given access to the audio recordings of the completed interviews, or the files of the transcripts or identifiers. I will not attribute your responses to you or your institution in any presentation or publication of these data.

I hope you will participate in this interview. Should you wish to contact me, you may reach me at 1217 E. Maxwell Lane, Bloomington, IN 47401, U.S.A., by phone at (812)3279063 or by e-mail at shuchiu@indiana.edu.

Thank you for your assistance.

Sincerely,
Shu-Chuan Chiu
Ph.D. Candidate in Public Affairs
Indiana University Bloomington
1217 E. Maxwell Lane
Bloomington, IN 47401
TEL: (812)3279063
E-mail: shuchiu@indiana.edu

Appendix D: Interview Protocol

- Evolution and Background of IT Management Curricular Adaptation
  - How many times has your program adapted your IT management curriculum and what are the major changes each time?

- Motivation & Goals Behind the IT Management Curriculum
  - What are the major considerations of adapting your IT management curriculum?
  - What are your program's major considerations of not offering an IT management concentration?
  - What are your program's major considerations of requiring an IT management course?

- External Contexts--influence from the external environment
  - Has NASPAA's accreditation or MPA curricular standards played any role in your program's curricular adaptation?
  - We know that the U.S. News and World Report ranks MPA programs. Have their ranking criteria played any role in the decision making of your MPA curriculum?
  - Do you think there is a general trend among other MPA programs in terms of their curricular arrangement?
  - Has your assessment of the trend played any role in your program's curricular adaptation?
  - Do you think there is a trend among MPA programs with strong IT management curricula in terms of their curricular arrangement?
  - Has your assessment of the trend among leading MPA programs with strong IT management curricula influenced the decision making of your program's curriculum in any way?

- Internal Processes and Contexts of Curricular Decision Making
  - What were the roles of participants in the last curricular adaptation?
    - Who participated?
    - What were their preferences?
    - How were their preferences channeled into the curricular adaptation processes?
    - Who were the key decision makers?
  - How did each of the following factors affect your program's curricular adaptation decision making process and outcome?
    - Faculty size
    - Number of faculty members specializing in IT management
    - Current or past MPA director(s)
    - Total credit hours for the degree
    - Number of core courses credit hours
    - Program affiliation
    - Availability of other academic programs providing IT management courses on the same campus
  - Post adaptation--After the last curricular adaptation,
    - have there been any evaluations?
    - have the goals set out for the curricular adaptation achieved?

SHU-CHUAN CHIU
邱淑娟

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EDUCATION

2007   Ph.D. in Public Affairs, Indiana University Bloomington, U.S.A.
Dissertation: *Understanding the Adoption and Diffusion of Information Technology Related Curricula: Multiple Theoretical Perspectives*
Major Fields: Public Management and Public Policy Analysis
Minor: Regional Economic Development

1995   Master of Arts, Graduate School of Political Science, National Taiwan University, Taiwan.
Master's thesis: *The Evolution of Irrigation Organizations in Taiwan (1945-1995): A Political Economy Perspective*
Major: Public Administration

1992   Bachelor of Arts, Department of Political Science, National Taiwan University, Taiwan.

HONORS AND AWARDS

Conference Travel Award   From the Ministry of Education, Taiwan, in February, 2003 and October, 2006.

Fee Assistance Award   From the Office of International Services, Indiana University Bloomington in May, 2002.

Conference Travel Award   From the School of Public and Environmental Affairs, Indiana University Bloomington in March, 2001 and October, 2006.

Doctoral Study Fellowship   From the Ministry of Education, Taiwan from August, 1999 to July, 2002. Est. USD$83,000.

Certified Civil Servant   Honored by the President of Taiwan in October 1996 after I passed the national senior civil servant examination and the subsequent training.

RESEARCH AND TEACHING INTERESTS

Organizational Theory, Adoption and Diffusion of Innovations, Public Management, Public Policy Analysis, Cost Benefit Analysis, and Research Methods (Quantitative and Qualitative)

PEER-REVIEWED CONFERENCE PROCEEDINGS

"Understanding the Adoption and Diffusion of Innovative Information Technology Curricula: A Case Application to Master of Public Administration Programs." In *Proceedings of the 2006 International Conference on Digital Government Research*. 375-376. San Diego, California. National Science Foundation. http://portal.acm.org/ft_gateway.cfm?id=1146709&type=pdf&coll=GUIDE&dl=GUIDE&CFID=973457&CFTOKEN=20692217

WORK IN PROGRESS

"Factors Affecting the Adoption of Information Technology Management Curricula: An Empirical Examination." To be submitted to the *Journal of Public Administration Research and Theory.*

"Infusion of Meanings and Diffusion of Institutions: Empirical Evidence from the Adoption of Information Technology Related Curricula by Master of Public Administration Programs." To be submitted to a special topic forum of the *Academy of Management Journal* entitled "Organizations and Their Institutional Environments: Bringing Meaning, Culture and Values Back in."

"Moving from Normative Recommendations to Positive Assessments: The Case of Information Technology Related Curricula in Master of Public Administration Programs." To be submitted to *Public Administration Review*.

"An Assessment of the Research Program on the Information Technology Related Curricula in Master of Public Administration Programs." To be submitted to the *Journal of Public Affairs Education.*

"A Review and Meta-Analysis of the Empirical Research Program on Cost Benefit Analysis." To be submitted to the *Journal of Public Policy and Management,* with Kerry Krutilla.

CONFERENCE PRESENTATIONS

"Understanding the Adoption of Information Technology Curricula in Master of Public Policy or Administration Programs in the United States of America." Presented at the 2006 Association for Public Policy Analysis and Management Fall

Conference in Madison, Wisconsin, November 2-4, 2006.

"The Influence of Information Technology on Public Administration Curricula: The Case of Taiwan." Presented at the 26th Annual Teaching Public Affairs in Dayton, Ohio, February 8, 2003.

"Internet Use for Earthquake Relief and Recovery: The Cases of Taiwan and Turkey." Coauthored with Mete Yildiz. Presented at the 62nd national conference of the American Society of Public Administration in Newark, New Jersey, March 11, 2001.

ACADEMIC SERVICE

Reviewer   Division of Organizational Communication and Information Systems, Academy of Management 2006 Annual Meeting.

TEACHING EXPERIENCE

Mandarin Tutor, Center for International Business Education and Research, Kelly School of Business, Indiana University Bloomington. February 2003 ~ May 2007.

Associate Instructor, Research Methods and Statistical Modeling, Indiana University Bloomington. Fall, 2002 and 2003.

WORK EXPERIENCE

Specialist, Department of Domestic Information Service, Government Information Office of the Executive Yuan, Taiwan. April 1998 – July 1998.
- Prepared daily news briefings, summarized citizen opinions published in printed media, and provided policy suggestions for the Prime Minister of Taiwan
- Edited the 1998 government publication on the Cabinet performance

Specialist, Division of Commerce, Bureau of Businesses, Taipei City Government, Taiwan. September 1996 – April 1998.
- Coordinated research projects on Taipei's economic development strategies
- Provided opinion in city-level urban planning committee meetings on behalf of the Bureau
- Coordinated collaboration between city agencies and community groups to develop and implement a community development project
- Coordinated the 1996 Industry, Commerce and Service Census

- Prepared various reports on Division performance and kept minutes of Division meetings
- Responded to citizen complaints

Specialist, Division of Finance, Taipei City Bus Administration, Taipei City Government, Taiwan. April 1996 – September 1996.
- Participated in a project to computerize and integrate the ticketing systems of Taipei City buses, which involved cross-sector companies and multiple government agencies
- Collaborated with the information division in a project aimed at streamlining the Administration

Research Assistant to the principle investigator Prof. Giin-Tarng Hwang, Department of Political Science, National Taiwan University for a project on water rights regulation. September 1993 – July 1994.
- Researched the water rights issues related to multiple-purpose water reservoirs

Research Assistant to the principle investigator Prof. Giin-Tarng Hwang, Department of Political Science, National Taiwan University for a project assessing the impact of a policy to integrate the jurisdictions of Taipei City, Taipei County, and Keelung City. September 1992 – June 1993.
- Drafted the chapter of the final report on the constitutional issues involved in the integration policy
- Assessed how the integration policy would impact the Bureau of Businesses and Committee of Legal Affairs of the Taipei County Government and proposed strategies to address the impact

Interviewer for a survey of social change in Taiwan. Principle investigator Research Fellow Hei-Yuan Chiu, Institute of Sociology, Academia Sinica, Taiwan. July 1992 – September 1992.

Interviewer for a survey on electoral behavior in the 1989 legislator election. Principle investigator Prof. Fu Hu & Yung-Han Chu, Department of Political Science, National Taiwan University. January 1990 – March 1990.