

AN ASSESSMENT OF THE CONTINGENCY THEORY OF MIS

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Abstract

The purpose of this paper is to define and critique the use of contingency theory in the field of Management Information Systems (MIS). The existence of such a theory is demonstrated through a detailed review of the MIS literature. The development of contingency theory in MIS is compared to the development of Organization Theory. The developments in the two fields have been remarkably similar and the field of MIS can benefit from the experiences of organization theorists. We argue that since MIS is at an early stage of development, it is now repeating some of the unproductive assumptions and lines of development of contingency theory.

The conclusion from this analysis is that the contingency theory implicit in MIS research is inadequate. Progress in the field has been hampered by the adoption of a naive meta-theory and a narrow research perspective. This has resulted in highly mixed empirical results, a premature quantification strategy, and ill-defined concepts of performance and fit.

A series of recommendations for improving the theoretical basis of MIS are given. These recommendations include relaxing the assumptions that constitute the naive meta-theory of a contingency theory in MIS. A more subjectivist, less functional, less unreflexive and less deterministic approach is advocated. In addition, changes in research methodologies are recommended. An increased emphasis on training in case study methodologies, longitudinal research and ethnographic approaches is suggested.

1. Introduction

The purpose of this paper is to critique the use of contingency theory in the field of Management Information Systems (MIS). The existence of such a theory is demonstrated in a detailed review of the MIS empirical research. The development of the contingency theory in the field of MIS is compared to that of organization theory. The developments in the two fields have been remarkably similar and it is likely that the field of MIS can benefit from the experiences of organization theorists.

Section 2 presents a brief summary of the development of a contingency approach in organization theory and the present paradigm diversity existing in the field. The development of the field of MIS is presented in Section 3 and the emergence of the contingency theory of MIS is discussed in Section 4. Each of the major contingency variables is discussed in turn as is the implicit contingency model. Section 5 contains a summary of studies in MIS using the contingency model; the use of the model is critiqued in detail in Section 6. Section 7 presents a series of recommendations to enhance the further development of the field of MIS.

2. The Contingency Theory of Organizations

To understand and appreciate the current state of a contingency approach to MIS, it is worthwhile to look at its predecessor, a contingency approach to the study of organizations.

2.1. Contingency Theory

The contingency theory approach to the study of organizations developed beginning in the 1950's as a response to prior theories of management¹ that, despite their diversity, commonly emphasized "one best way" to organize. This approach is summarized by Szilagy and Wallace [Szilagy&Wallace 80] from the original work [Kast&Rosenzweig 73]:

"The contingency approach attempts to understand the interrelationships within and among organizational subsystems as well as between the organizational system as an entity and its environments. It emphasises the multivariate nature of organizations and attempts

¹From Scientific Management to the Human Relations movement to the Human Resources movement.

to interpret and understand how they operate under varying conditions ...”

Contingency theorists attempted to identify the important variables assumed to influence organizational performance. They then attempted to operationalize and measure these variables and determine their effects on performance. Seminal studies were done by researchers such as Lawrence and Lorsch [Lawrence & Lawrence 67] (influence of the environment on organizational integration and differentiation), Burns and Stalker [Burns & Stalker 61] (influence of environment on organization structure), and Woodward [Woodward 65] (influence of the technology on organizational structure).

There are a number of important assumptions in the contingency approach, some explicitly stated and others implicit. Some of the important ones are listed in summary form below.

- * **Fit.** The better the fit among contingency variables [e.g., between technology and organizational structure] the better the performance of the organization. Performance is generally defined as a function of financial variables such as return on investment, profit or net wealth.
- * **Rationality.** Organizational actors perform in ways that are always in concert with the superordinate goal of organizational effectiveness. As a consequence, there is always goal consensus among decision makers within an organization.
- * **Situational determinism.** For example, the environment is given and managers and thus organizations cannot influence it.
- * **Deterministic models.** Clear causal inference is often made.
- * **Cross-sectional and non-historical empirical methods.**
- * **Linear model of contingency variables.** Most contingency studies rely on statistical methods which are based on the general linear model, e.g., regression.

The contingency approach to organization theory has been heavily criticized. The over-riding criticism is that the contingency variables account for only a small percentage of the variance in performance. The weak empirical support can be traced back to the ill-defined concepts of "fit" and "performance" and to the lack of recognition of the possibility of non-rational objectives. For example, contingency theory has been criticized for being both too macro and too micro in its approach. Argyris and Silverman [Argyris&Silverman] point out that it is not possible to leave people out of the analysis. They argue that research must become more micro and bring in the values, perceptions, and attitudes of players. These shape behaviour and ignoring them is to look at

organizations as disembodied units.

Critical theorists point out that contingency theory is too narrowly managerial and ideologically based and systematically excludes discussions of class domination [Braverman 74] [Edwards 79] [Benson 83].

In an empirical test of the assumptions of contingency theory based on the work of Galbraith, Schoonoven presented a number of damaging criticisms [Schoonoven 81]. These include the lack of clarity in contingency theory arising from the ambiguous nature of statements used. Schoonoven argues that contingency theory is not a theory at all but an orientating strategy with no substance. She observes, in addition, that the specific forms and interactions between the contingency variables are never explained. Schoonoven's conclusions are generally discouraging for the hardy remaining contingency theorists. Other criticisms of contingency theory include the extreme positivist nature of the approach and the firm belief in the existence of a measurable, albeit illusive, objective reality.

2.2. Paradigm Diversity

Since the gradual demise of contingency theory as a major stream of thought in organization theory, there has been a great diversity of theories of many different types. Some proposed theories are:

- * Political theories e.g., [Pfeffer 8x]
- * Social construction theory e.g., [Berger & Luckmann 67], [Lincoln & Guba 85] Organizational life cycle theory e.g., [Cameron&Quinn 83]
- * Organizational demography theory e.g., [Pfeffer 83]
- * Critical theory e.g., [Braverman 74], [Edwards 79]
- * Institutionalism theory e.g., [Meyer&Rowan 77]
- * Resource dependency theory e.g., [Pfeffer & Selancik 78]
- * Population ecology theory e.g., [Hannan & Freeman 77]
- * Transaction cost economics theory e.g., [Williamson 75]

This abundance of theories has provided interesting debate and forwarded the careers of some of

their well known proponents; however the benefit for the field of organization theory in the quest to understand organizations is less clear but has certainly broadened the perspective of the field.

In a devastating critique of organization theory, Astley [Astley 85] pointed out the paradigm diversity of the field and the resulting non-cumulative knowledge base. Paradigms are exposed as politically and socially developed and result from the theory dependency of facts. According to Astley, one of the major incentives for the generation of new paradigms has not been the quest for understanding but rather the lack of rewards for working within existing paradigms.

The development process of the field of organization theory is in itself an interesting study, but the purpose of this paper is to compare this development to that of the field of Management Information Systems (MIS). The next two sections present the current state of the field of MIS and then compare resulting recommendations for the continued development of the field of MIS. These recommendations are drawn from the experiences of the development of organization theory.

3. The Development of the Field of MIS

3.1. Definition

There is no consensus on the definition of MIS. Some writers use "information systems" and more recently the broader term "information technology" has become popular. In this paper the term MIS is used as defined below.

"MIS is an integrated, user-machine system for providing information to support operations, management, analysis and decision-making functions in an organization. The system utilizes computer hardware and software; manual procedures; models for analysis, planning, control and decision making; and a database." [Davis&Olson 85]

The field of MIS is relatively young and the early works appeared in the late 1960's. The field draws on at least three base disciplines: Organization Theory, Computer Science, and Management Science. As a consequence of this diversity, the boundaries of the field were unclear in the early stages and remain so today. The early attempts to clarify the field [Mason&Mitroff 73] [Gorry & Scott-Morton 71] [Davis 74] are well known to MIS researchers. However, they have not provided a strong theoretical base for subsequent MIS research.

3.2. Early Development

MIS began to develop as a field in the mid 1960's; little was published until the late 1960's. The early work roughly divides into the three categories that resemble the base disciplines. As an example of MIS research with a behavioral flavor, IBM performed and published research on the effects on computer programmer productivity of working in teams [Baker 72] supervised by a chief programmers.

In an example of MIS research with a management science bias, Marschak developed a model of the economics of information systems [Marschak 71]. The model maximizes the expected payoff of a particular information structure, decision rule, payoff matrix and probability vector of possible events. The objective in this type of research is to find the optimum MIS design and usage conditions to maximize a payoff function.

The computer science approach to MIS research has generally had a more micro perspective. The aim is often to find the most efficient way to perform particular computing tasks. Tasks of interest include data storage and retrieval research on different types of databases, artificial intelligence and improving processing speeds. The work on the development of a relational databases by Codd is an example of this type of MIS research. The work resulted in the development of a new method of creating and using databases that was radically different from the techniques used at the time [Codd 70].

The three examples of the types of MIS research are typical but do not nearly cover the breadth of the field. It is difficult to estimate what the proportions of each type has been although it is likely behavioral research has dominated. Much of the research had contributions from at least two base disciplines and as the field has developed these early discipline distinctions have faded. In this paper, the primary focus is research most closely related to the base discipline of organization theory.

4. The Emergence of a Contingency Theory of MIS

As the field of MIS has grown and developed, a clear contingency approach has emerged. Although it is not explicitly labeled a contingency theory, the evidence is strong and the similarities to organization theory are clear. The theory suggests that a number of contingency variables influence the performance of information systems; the better the "fit" between these variables and the design and use of the MIS, the better the performance. A representation of this model, that is implicit but unstated in much of MIS research, is presented in figure 4-1. The model is discussed in detail below.

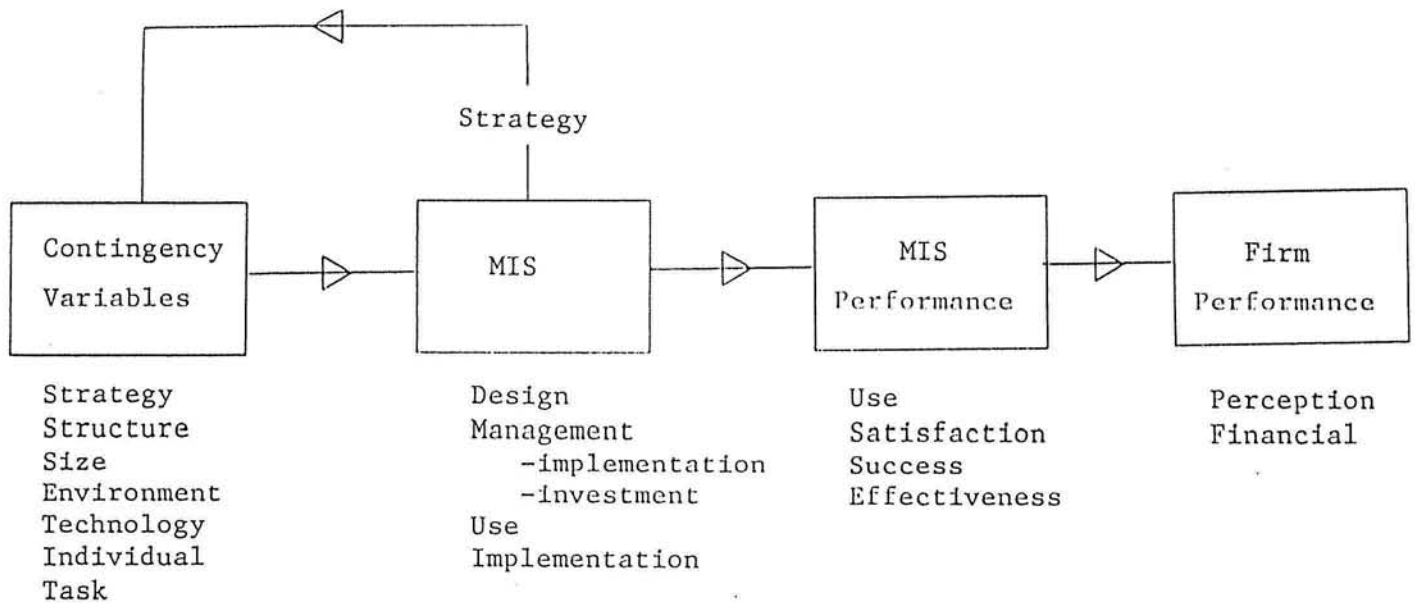


Figure 4-1: Implicit Contingency Model in MIS Research

4.1. The Implicit Contingency Model

The contingency model is highly deterministic and rational. The dependent variable is either the performance of the MIS or the performance of the organization. In the latter case the performance of the MIS is assumed to directly influence the performance of the organization. The basis of the model is "fit" between the contingency variables and the aspect of MIS being investigated. In this model, the contingency variables are primarily contingencies of the MIS or MIS function, not broader organizational contingencies. The degree of fit is posited to determine the level of performance. The methodologies of cross-sectional data gathering and sophisticated statistical analyses, based on the general linear model, support the deterministic assumption of a linear relationship between

contingencies and performance. These statistical techniques assume random and representative sampling however in field studies, where the organization is the unit of analysis, such random sampling rarely occurs.

The model assumes rational behavior on the part of actors. For example, if a better MIS is designed, rational actors will willingly use it, thus improving their contribution to organizational performance.

Performance measures of MIS vary from user information satisfaction to computer scientists' measures of hardware processing speeds. The measures of organizational performance are often global measures of financial performance which bravely attempt to deal with the often swamping effects of all the moderating variables.

4.2. Contingency Variables

Contingency variables of interest to MIS researchers include:

- * Structure
- * Strategy
- * Size
- * Environment
- * Technology
- * Task
- * Individual.

In this section, each contingency variable is discussed in turn, with examples from empirical studies.

The topic of business strategy and its relationship to MIS has recently become an area of considerable interest. The majority of work analyzing the relationship between strategy and MIS has been in the form of definition of conceptual frameworks or case studies [Ives&Learmonth 84] [Porter&Millar 85] [Benson&Parker 85] [McFarlan & McKenny 83] and [Lucas 86]. An examples

of an empirical study using strategy as a contingency variable are [Vitale,Ives & Beath 86], which looked at information assets and opportunities and how they were incorporated into a firm's strategic planning process. In a study of wholesaling companies, Cron and Sobol looked at levels of investment in information technology, measured by the number of standard business functions that were computerized and ownership of information systems [Cron&Sobol 83].

A number of MIS researchers have examined organizational structure as the primary contingency variable. The methods for analyzing the structure of an organization have primarily been adapted from organization theory. As was the case with strategy the early work was conceptual in an attempt to lay a foundation. Early information processing theories that influenced subsequent empirical work are [Galbraith 73], [Tushman & Nadler 78], [Gordon&Miller 76]. Examples of proposed frameworks using organizational structure as a contingency variable to guide MIS research are [Ein-Dor & Segev 78], [Davis 82], and [Olson & Lucas 82].

In an example of an empirical study, Olson analyzed the fit between the organization structure and the structure of the MIS services function [Olson 80]. Ein-Dor and Segev [Ein-Dor&Segev 82] looked at degree of organizational centralization and its relationship to MIS centralization.

Technology is frequently operationalized in MIS studies as the type of MIS or technological sophistication. For example, Srinivasan [Srinivasan 85] looked at the relationship between the technological sophistication of the MIS and the resulting MIS effectiveness. Mann and Watson [Mann & Watson 84] measured the type of DSS technology used and its relationship to the process of DSS design.

In organization theory, organizational size is often included as a contingency variable in empirical studies and is suggested to have an important moderating influence. This concept has been extended to MIS. Klatzky found that size was partially responsible for the decentralization that accompanied automation [Klatzky 80]. Carter found that organization size moderated the relationship between MIS and the structure of newspaper organizations [Carter 84].

In a an elaborate planning methodology for the design of enterprise-wide information systems [Benson&Parker 85] the authors identify the environment of the organization as an important

variable. Another way that environment is operationalized in MIS studies is the environment within the organization that the MIS function serves. For example, Ginzberg [Ginzberg 79] looks at organizational complexity as well as task and technology and their relationship to the MIS implementation process. In a study of MIS planning success, Pyburn [Pyburn 83] operationalized environment at both levels, looking at volatility of the business and the complexity of the MIS environment.

In MIS research, task as a contingency variable refers to the types of activities to be supported by information systems. For example, Harel and McLean [Harel & McLean 85] look at type of application: simple versus complex. Lucas [Lucas 75a], in a study of sales people and their use of information systems, looked at use of the system for various tasks performed in the course of sales.

Individual characteristics refer to individual differences and the fit with various IS activities. For example, Weiss [Weiss 83] looked at IS managers' personality factors and social support as well as organizational stresses and their effects on strain, job satisfaction, and ultimately illness. Kaiser and Bostrom [Kaiser & Bostrom 82] looked at differences in Jungian personality dimensions between users and systems personnel and their relationship to system success.

4.3. MIS Variables

The MIS variables typically investigated are aspects of the MIS or MIS function taken independently. These are: management of the MIS function (e.g., [Bender 86]), implementation of MIS (e.g., [Ginzberg 79]), control of MIS (e.g., [Ives & Olson 82]), design of MIS (e.g., [Baroudi, Ives & Olson 86]), and use of MIS (e.g., [Lucas 75b]).

4.4. MIS Performance Variables

MIS performance is typically operationalized using perceptual measures such as user satisfaction [Ives, Olson & Baroudi 83], success [Martin 82], effectiveness [Srinivasan 85], quality [Ginzberg 79], and innovativeness [Zmud 83]. Use of the system is employed in some studies as an indicator of system performance [Lucas 75a], [Ginzberg 79]. This is confounded by whether system use is voluntary or involuntary.

4.5. Organizational Performance

When used, organizational performance is generally operationalized by financial measures or measures of volume. Examples of financial measures are total general expenses per total premium expenses [Bender 86], pre-tax return on assets, return on net worth [Cron&Sobol 83], branch performance for loans and deposits [Lucas 75a], and contribution to profits [Saunders & Scamell 86]. Measures of volume include sales [Lucas 75a] and sales growth [Cron&Sobol 83]. Organizational performance is rarely operationalized and almost never in combination with MIS performance measures.

5. Summary of Empirical Studies

Figure 1 [see rear of paper] shows² a summary of selected empirical studies which use a contingency model as a guide. The methodology used to select studies for the table was a "random walk" through leading MIS journals, primarily MIS Quarterly and Communications of the ACM. Although we compiled no statistics of types of models followed in empirical studies, it was clear that the contingency model dominated empirical studies in these journals.

The contingency variables used in these studies follow a consistent pattern with similar studies in organization theory. Generally, one to three contingency variables were chosen in each study, and if a good fit was achieved between the contingency variables and some aspect of the MIS, superior performance was predicted.

In general, the amount of variance of performance explained in the studies in the table was very low, indicating faults with either the underlying model or operationalization of the variables. Since this lack of significant findings was consistent, it is more likely that the underlying model is inadequate.

The studies were usually limited in scope to one of the aspects of the MIS or MIS function. In very few cases were more than one variable or the relationship between multiple aspects of the MIS

²Studies not cited in the text but included in the table are: [Ballou & Giri 82] [Bargeron1986 86] [Lucas 84] [Raymond 85].

considered. Thus, a simplistic model of examining each aspect in isolation is implicit. This approach assumes away richness and complexity of information technology in organizations [Orlikowski 87].

Furthermore, studies generally take in isolation, a few contingency variables and one aspect of the MIS coupled with a global measure of performance. It is no surprise that with this simplification of a highly complex reality, higher correlations are not achieved.

The measurement of MIS performance depends entirely on the perspective of the responder. Performance is generally measured with poor surrogates such as use, satisfaction, success, and quality. These are perceptual measures (except use) which are highly dependent on the stake of the responders. For instance, users that have been involved in the design process are more likely to be satisfied with a system, despite the reality of system performance. MIS performance is a multi-faceted artifact and most researchers have arbitrarily chosen a single measure as a surrogate. This choice therefore limits the amount of variance explained and contributes to low construct validity of the studies.

A further contradiction is noted. All measures of MIS performance except usage are perceptual in nature, and thus epistemologically opposed to the deterministic, rational assumptions of the contingency model.

The positive link posited between MIS performance and organizational performance is highly rational and deterministic. The presumption is made that a satisfactory, highly used, successful, and effective MIS determines organizational performance. In most studies, this link is implicit. The few studies which measure organizational performance generally do not measure MIS performance and also implicitly assume this link. Organizational performance, when operationalized as financial measures, is subject to gross manipulation (e.g., for tax purposes, etc.) and thus can misrepresent actual performance. In general, low correlations between contingency variables and organizational performance is not surprising, considering the number of moderating variables that potentially swamp the effect of MIS and organizational contingency variables. Furthermore, differences in perception, frames of references and stake make the search for a universal performance measure a hopeless task.

In our analysis of empirical research in MIS, we were surprised by the consistent adherence to a contingency model. It became clear to us that lessons could be learned from experiences within the field of organizational theory. The field of MIS is in a fortunate position of being able to learn if we are sufficiently open-minded.

6. Criticisms of Contingency Theory

The use of a contingency model in MIS research has been heavily influenced by the field of organization theory. Unfortunately, contingency theory has been applied uncritically in the field of MIS and many similar problems have occurred. Recent literature reviews have been critical of the accumulated knowledge of the social and organizational impacts of MIS. Most of the predicted impacts have not received empirical support [Markus&Robey 86].

We identify four major criticisms of the contingency theory of MIS. They are:

1. Use of naive meta-theory.
2. Conflicting empirical results from studies measuring similar constructs; low correlations.
3. Ill defined concepts of fit and performance.
4. Narrow perspective of researchers.

Each criticism is discussed below.

A naive meta-theory is the basis for all contingency theory³ research in MIS. At least four assumptions are regularly made that form the cornerstone of the meta-theory. These are;

- * Rationality
- * Functionalist paradigm
- * Objectivist approach
- * Deterministic model

³This includes much of the computer science and management science research in MIS

The rationality assumption relates to all aspects of MIS. Managers are assumed to make rational non-political decisions based on accurate and plentiful information. Improved user satisfaction is assumed to lead to improved job performance. Better system design is assumed to lead to better job performance. Improved job performance is assumed to lead to improved organizational performance, despite the large number of moderating variables that may swamp any improvements.

The functionalist paradigm is a perspective which is highly pragmatic in orientation with a highly problem-oriented approach. It is usually committed to a philosophy of social engineering as a basis for social change; it emphasizes the importance of understanding order, equilibrium, and stability in society. This approach reflects an attempt to apply the models and methodologies of the physical sciences to studying organizations and information systems [Burrell & Morgan 79].

Contingency theory research in MIS has a highly objectivist approach. The existence of an objective and measurable reality is assumed. The resulting epistemological stance is to construct a positivist science using surveys, laboratory experiments and other forms of abstracted empiricism without a solid theoretical base. Reality by definition is that which is measurable and external; the social world is as concrete as the physical sciences. Objectivism is a subset of the functionalist paradigm.

Highly deterministic models are generally posited. X causes Y; thus it must be possible to isolate and measure X and Y, and to determine the strength of the relationship. If the relationship is sufficiently strong, causality can be assumed.

These four assumptions lead to naive meta-theory which assumes away much of the richness and complexity of the social sciences. The possibility of a more subjectivist approach is ignored, as are the concepts of a social construction of reality [Berger & Luckmann 67] and the political nature of organizations. Weick's [Weick 79] sentiments originally targeted for organization theory researchers apply equally well in MIS:

"Problems persist because managers and theorists continue to believe that there are such things as unidirectional causation, independent and dependent variables, origins and terminations."

These brave assumptions lead to the second criticism of very mixed empirical evidence. The

correlations that have been produced are generally low and explain little variance in the dependent variable by the independent variables. It is not surprising that these low correlations have occurred given the limited scope and power of the contingency variables and the cross-sectional, survey-based methodologies used. We conclude that a premature quantification strategy has been followed by many MIS researchers, before a sufficient understanding of the processes to be quantified is attained.

One of the legacies of organization theory is the ill-defined constructs fit and performance. The better the fit between the contingency variable and the aspect of MIS under investigation, the better the predicted performance. The operationalization of "fit" is very difficult, and as a consequence, many researchers have chosen inconsistent methods. These have ranged from the the binary construct of "fit or no fit" to a continuous spectrum ranging from "poor fit" to "good fit". Given that "good fit" is established, good performance is predicted. Performance is a value-laden construct, highly dependent on the position from which it is viewed. In addition, performance is multi-faceted and has often been simplistically operationalized by one perceptual measure.

In the unlikely event that "fit" and "performance" are adequately defined and deterministically related, this relationship is typically measured at one point in time. The assumption is therefore made that fit and performance measured at the same time are causally related, ignoring any potential time lag from cause to effect. None of the empirical studies investigated the time lag from contingencies in MIS to performance.

The preponderance of contingency approaches to empirical research reflects a rather narrow paradigm. There has been a significant amount of discussion within the MIS community about the need to define more precisely "our" paradigm. We feel this is an unnecessary restriction. Organization theory has flourished since the emergence of multiple paradigms. Organization theory has flourished with a large number of paradigms; however unconstrained paradigm expansion should be avoided. Paradigms need to be meaningful contributions and not just vehicles for personal career enhancement.

6.1. The Current State of MIS Research

A few researchers in MIS have recognized some of the shortcomings of a contingency theory approach and some work on the importance of power, politics, and the existence of a social construction of reality has begun. In general, however, the field is still emerging from the contingency theory stage and many researchers are uncomfortable with the lack of a central MIS paradigm. The changes that are occurring are mainly in the "behavioral" areas of MIS research, those most closely related to organization theory. Computer science and management science-oriented MIS research retains a highly functionalist, rational flavor.

The research into the influence of power and politics in MIS is most encouraging. Markus recognized power and politics as significant determinants of MIS design and implementation [Markus 83]. She demonstrated that as a result of political negotiations during system design and development, rational management objectives for systems are not always translated into system design features [Markus&Robey 86]. Shrivastava posited and tested a political expediency model for decision making for computer purchase [Shrivastava & Grant 85]. Kling suggested that MIS can be analysed from an organizational and class politics perspective [Kling 80].

Research with a more subjectivist flavor is also beginning to appear. The proceedings from a conference in Manchester, England [Mumford et al 84] contains articles with the following titles:

"Contextualist Research and the Study of Organizational Change Processes" (A.M. Pettigrew)

"Perceptions and Deceptions: Issues for Information Systems" (K.B. White)

"The Poverty of Scientism in Information Systems" (R. Boland)

In a ground-breaking piece, Boland observed that the MIS is part of the environment in which managers interact to develop shared meanings and interpretations of ambiguous social reality [Boland 79].

These recent developments are encouraging but unfortunately not typical within MIS research. The state of research in MIS was neatly summarized by Ives, Hamilton & Davis [Ives,Hamilton&Davis

80] in a study which included the mapping of 331 recent MIS doctoral dissertations into research categories. Three primary areas were identified.

- * Environment Characteristics.
- * Process Variables
- * Information System Characteristics

Of the dissertations reviewed in [Ives,Hamilton&Davis 80], 30.8% of the studies were contingency-type field studies. Quantitative case studies accounted for 13.9% of dissertations while laboratory studies were used in 13.6% of cases. Non-data research (e.g., database design, conceptual work, system design methodologies, qualitative case studies) was performed in 30.5% of cases. Only one dissertation employed an ethnographic research methodology.

The next section presents some suggestions for future directions in MIS research.

7. Recommendations for the Further Development of the MIS Field

The development of the field of MIS has remarkable similarities to that of organization theory. The latter is further along the development path and thus a number of lessons can be learned for the future development of MIS. These are presented below. They are divided into general recommendations and specific suggestions for a program of research in MIS.

7.1. General Recommendations

Our general recommendations are:

- * Research should remove or at least relax the four assumptions that make up the naive meta-theory of a contingency theory in MIS. Rationality, functionalism, objectivism and deterministic approaches have constrained the development of the field. A generally more subjectivist, less functional, less unreflexive and less deterministic approach is recommended.
- * Research should recognize that there is no need for one overall paradigm of MIS research. Organization theory has flourished with a large number of paradigms; however unconstrained paradigm expansion should be avoided. Paradigms need to be meaningful contributions and not just vehicles for personal career enhancement.
- * Research should be more process-oriented and less concerned with attempting to manipulate data through sophisticated quantitative approaches to abstractly analyze outcomes. Stronger theories are required and it is necessary to resist the temptation to

follow a premature quantification strategy.

- * Research following alternative philosophical bases should be encouraged in MIS. Marxist, population ecology, and demographic approaches to MIS research are examples which could open new avenues for gaining insights.
- * A periodic self-evaluation process is required to determine the soundness of recent research developments in MIS. This process could be institutionalized as a regular event at the annual conference.
- * An increasing use of a case orientation to research is necessary to gain detailed insights into the MIS phenomena. More longitudinal and historical research is needed to gain more than the "snapshot" understanding that typically occurs in cross-sectional research.
- * Clarification of "performance" as the dependent variable is required. Is performance the appropriate dependent variable? Is it performance of the individual, the group, the firm the industry or society?

7.2. Specific Recommendations for a Program of Research

To achieve these aims, a program of research with a less narrow focus and less naive meta-theory than contingency theory is necessary. We suggest the following:

- * A wider selection of methodologies is advocated. These include:
 - grounded theory
 - qualitative case studies
 - ethnographic methodologies
 - longitudinal studies
 - historical perspective
 - combination of qualitative and quantitative measures in the same study

This will not be achieved without incorporated training in these methods in our PhD programs.

- * We are not advocating the abandonment of contingency research altogether. However, we suggest that researchers make far more modest conclusions about variable interactions, thus not portraying such a naive meta-theory of organizations. Our intention is not to banish positivism, and the aim is still to explain variance; however, to understand how variables co-vary in isolation is not sufficient to explain the complexity of MIS.
- * Significantly more theory-building is required in defining MIS as a construct in contingency models. Most of the studies cited look at one aspect of an MIS in isolation, and this follows a premature quantification strategy. It is necessary to appreciate the

interactions of the various aspects of MIS [i.e., management, use, control, design, implementation] [Kling&Scacchi 82].

- * This type of research requires more support in the form of acceptance for journals. The early works of this form must be of sufficiently high quality, however, to set appropriate standards in the field.

8. Conclusion

The field of MIS is still in its infancy and a contingency theory approach to research dominates. Progress in the field has been hampered by the adoption of a naive meta-theory and narrow research perspective. This has resulted in highly mixed empirical results, a premature quantification strategy and ill-defined concepts of performance and fit.

The development of the field of MIS is remarkably similar to that of organization theory. As a consequence, much can be learned from the experiences of organization theory. We have provided several recommendations to enhance the understanding of the field of MIS. The first is to relax the four assumptions that constitute the naive meta-theory of a contingency theory in MIS. A generally more subjectivist, less functional, less unreflexive and less deterministic approach is needed. In addition changes in research methodologies are necessary. An increasing use of case study methodologies, longitudinal research and ethnographic approaches is suggested.

An encouraging finding is the existence of a small number of researchers who have relaxed these highly debatable assumptions and are experimenting with less objectivist approaches. We hope that concern with the lack of a single MIS paradigm will be forgotten and a number of useful alternative paradigms will emerge in a way similar to organization theory.

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<u>Author[s]</u>	<u>C V's</u>	<u>MIS</u>	<u>MIS Perf</u>	<u>Organization Perf</u>
Ballou & Giri	T Stra Stru E	Design	Perf	
Baroudi el al	Task Stra	Design Use	Satisfaction	
Bergeron	Task	Control	Use	
Bender	Stra Task	Mgt		Financial
Cron & Sobol	Stra	Mgt Use		Financial
Ein-Dor & Segev	Stru Size	Mgt		
Ginzberg	T Task	Implementation	Satisfaction Use	
Harel & McLean	T Task I	Design	Performance	
Ives & Olson	Stra E	Control	Success	
Kaiser & Bostrom	I	Mgt	Success	
Lucas[1975a]	Stra I Task	Mgt Use		Financial
Lucas[1975b]	Stra I	Mgt		Performance
Lucas[1984]	E	Mgt	Effectiveness	
Mann & Watson	Task T	Design	Effectiveness	
Martin	Stra	Mgt	Success	
Olson[1980]	Stru	Mgt		
Powers & Dickson	Stru	Mgt	Success	
Pyburn	Stra Stru E	Mgt	Success	
Raymond	Task Size	Implementaion	Success	
Saunders & Scamall	Env	Mgt	Financial	
Shrinivasan	T Task	Design	Effectiveness	
Vitale Ives & Beath	Stra	Mgt	Satisfaction	
Weiss	E I Task	Mgt	Performance	
Zmud	Size Struc E	Design	Innovativeness	

Legend:

E = Environment, Stra = Strategy, Stru = Structure, Mgt = Management

I = Individual, T = Technology, Perf = Performance

Figure 1: Empirical Studies in MIS Classified by Contingency