경영정보학연구
제 4 권 2호
1994 년 12 월

정보시스템 기능의 아웃소싱 :상황모델의 실증적 연구

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Outsourcing of Information Systems Functions :An Empirical Study of A Contingency Model

A contingency model of outsourcing is developed from the information systems (IS) literature and strategic management literature in order to assess the following question: What factors influence change in the extent to which an organization outsources IS functions?

Based on the literature, this study identifies four IS factors–gaps in information quality, IS support quality, IS staff quality, and IS cost effectiveness–and three organizational factors–the gap in financial performance, strategic orientation, and the role of information technology in an organization–that influence the change in degree of outsourcing. These factors are hypothesized to influence the change in the extent of an organization's outsourcing of IS functions.

From a mail survey of 188 top IS executives in U.S. companies, the results of analysis of covariance and bivariate correlational and multivariate regression analyses provide the following major findings: (a) This study found support for the proposed research model. (b) The change in the degree of IS outsourcing is determined by gaps in information quality, IS support quality, IS cost effectiveness, and financial performance and by the role of IT among IS and organizational factors.

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I. INTRODUCTION

In recent years there has been an increasing amount of attention paid to outsourcing of information systems (IS) functions in organizations. A recent survey of IS senior executives highlights outside services management as one of the six strategic management issues confronting organizations in their management of corporate systems (Clark, 1992). Over the last few years, the new strategic role of outsourcing in business firms has been given much coverage in trade publications like Computerworld, Datamation, Network World, and MIS week. Trying to remain competitive and up-to-date in the rapidly developing world of computer technology is becoming a financial burden to many organizations in fields such as banking and financial services, health care, and manufacturing. Hiring outsiders to handle part or even all of its information services helps an organization provide better services and acquire and maintain a competitive advantage.

This research seeks to answer the following question: What factors affect the change in extent to which an organization outsources IS functions? The question assumes that the outsourcing option is not appropriate for all circumstances. The outsourcing option is a strategic mechanism which organizations may employ to position themselves under certain conditions. This research seeks to understand the situations which lead organizations to choose the outsourcing option as a strategic response. Answers to this question would provide managers and researchers with understanding and guidance concerning if and when outsourcing strategy should be utilized.

A brief description of the background of IS outsourcing is provided in the next section, followed by a review of strategic management literature related to the basis of research model. A description of research model and hypotheses are then provided, followed by details of the operationalization of the research variables, the data analysis, discussion of the results, and conclusions.

II. BACKGROUND

The term outsourcing refers to the acquisition of services from external service providers. Outsourcing has been described by Loh and Venkatraman (1991a; 1991b) using two dimensions: (1) the degree of internalization of technological

resources and (2) the degree of internalization of human resources. Loh and Venkatraman (1991a) defined this internalization as follows:

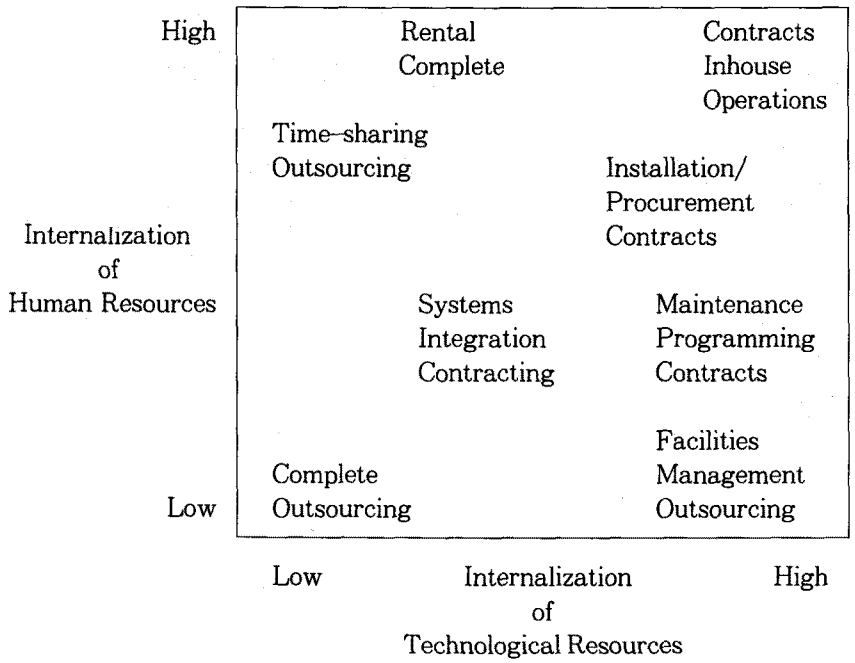
> Internalization refers to ownership by the focal organization which takes on full control with profit and loss responsibility. Technological resources includes the entire infrastructure involving hardware, software, and communications systems deployed, while human resources include managers, programmers, systems administrators, maintenance and related personnel involved in the design, maintenance, and operation of the overall IT infrastructure. (p. 6)

Based on the above dimensions, Loh and Venkatraman(1991a) define outso-urcing as "involving a significant use of resources —either technological and/or human resources—external to the organizational hierarchy in the management of the IT infrastructure"(p. 6). Further, they argue that a simple dichotomy of "in-house function" versus "outsourcing" does not capture the complexity inherent in managing IS functions. Consequently, they propose a continuous measure that is a superior conceptualization of IS outsourcing. Figure 1 presents a definitional framework of outsourcing (Loh and Venkatraman, 1991b) and indicates that outsourcing options depend on the qualifications of the service receiver to perform the IS activities relative to the qualification of the outside service providers (Walker, 1988).

In this research we define broadly outsourcing of IS functions as the practice of turning over part or all of an organization's IS functions to external service provider(s). This definition includes the following external services: applications development and maintenance, systems operation, networks/telecommunications management, end-user computing support, systems planning and management, and purchase of application software, but excludes business consulting services, after-sale vendor services, and the lease of telephone lines. An organization can obtain these services through the following types of outsourcing: complete outsourcing, facilities management, systems integration, time-sharing, and other contracts(including rental, installation & procurement, and maintenance & programming).

Outsourcing is really not a new phenomenon, since its roots can be traced to the traditional timesharing and professional services of the 1960s and 1970s. Today

〈Figure 1〉 Alternative Types of IS Outsourcing.
(Adapted from Loh and Venkatraman 1991)



outsourcing has become a valid option in all areas of information systems services (Apte and Winniford, 1990). For example, certain industries-like thrift institutions, which have an early need for on-line systems-have long purchased timesharing and facilities management services. Other companies have followed a path similar to that of the small brokerage firm that dismantled its data center in the early 1970's and since then has contracted out all its data processing and programming (Schiffman and Loftin, 1991).

However, the nature of outsourcing has evolved. Compared with the 1970's, current outsourcing practices differ in the following key ways (Aucoin, 1991; Schiffman and Loftin, 1991): (a) Larger companies are outsourcing. (b) A greater range and depth of services are being outsourced. (c) Service providers are accepting responsibility and risk. (d) The nature of the relationship with the service provider is changing as a partnership. (e) Information technology intensity is higher.

The key trend of today's outsourcing strategy is the shift in focus from technology focus to information utilization and management. From this perspective, outsourcing can be seen as the evolution of

basic data processing services from independent and unique department to a utility -like service, similar to telephone or electrical services. Rather than spend time and resources building an internal computing infrastructure, an organization concentrates its efforts on the effective use of information and the creation of new analytical data with which they can improve management's responsiveness to organizational needs(DATAPRO, 1991).

Since outsourcing presents an alternative way of providing IS services, it can be more or less attractive depending on the company's unique needs and circumstances (Schiffman and Loftin, 1991). The factors contributing to the attractiveness and growth of outsourcing are classified into three major categories: strategic, economic, and technological factors (Apte, 1990; Apte and Winniford, 1991; Aucoin, 1991; Benko, 1994; DeMuth, 1990; Gantz, 1990; Gardner, 1991; Huff, 1991; Kelly, 1990; Ketler and Walstrom, 1993; Loh and Venkatraman, 1991a; Mangan and Carlini, 1991; Schiffman and Loftin, 1991). Strategic factors are (a) focus on the core business, (b) improved focus on strategic use of information technology, (c) enhanced IT competence, and (d) enhanced IS staff expertise. Economic factors are (a) economies of scale and scope and (b) cost containment and predictability. Technological factors are (a) access to leading-edge technology and (b) avoidance of obsolescence risk.

In spite of the benefits listed above, there are also drawbacks to outsourcing. The factors that may make outsourcing unattractive to potential receivers and lead to resistance on their part can be classified into three general categories: managerial, cost related, and conflicting interest factors(Apte, 1990; Apte and Winniford, 1991; Aucoin, 1991; Benko, 1994; DeMuth, 1990; Gantz, 1990; Gardner, 1991; Huff, 1991; Ketler and Walstrom, 1993; Kelly, 1990; Loh and Venkatraman, 1991a; Mangan and Carlini, 1991; Schiffman and Loftin, 1991). Managerial factors are (a) loss of flexibility or control and (b) threat to long term career prospects. Cost related factors are (a) increased coordination costs and (b) hidden or potential costs. Conflicting interest factors are (a) profit-motivated outsourcing service provider and (b) systems and data confidentiality.

The advantages and disadvantages discussed above provide the background of this research. These benefits and drawbacks suggest that there are certain condi-

tions and factors that contribute to an organization's decision to outsource IS functions to a service provider.

Ⅲ. LITERATURE REVIEW

Strategic management as a discipline is concerned with how firms formulate and implement strategies in order to accomplish a desired performance goal(Schendel and Hofer, 1979). In the context of this research, resource-based theory and resource dependence theory are reviewed to help provide insight into the growing trend toward outsourcing of IS functions.

1. Resource-Based Theory

Resource-based theory views a firm as a collection of productive resources. The growth of the firm depends upon a desire to utilize slack resources(Penrose, 1959). Rubin(1973) further defines a resource as a "fixed input which enables a firm to perform a particular task" (p. 937). A variety of authors have generated a list of firm resources which may enable a firm to conceive of and implement strategies that improve its efficiency and effectiveness (Barney, 1991; Hitt and Ireland, 1986; Thompson and Strickland, 1983). These potential firm resources can be conveniently classified into three categories: physical capital resources, human capital resources, and organizational capital resources (Barney, 1991).

Grant(1991) provides in his five-stage procedure a practical framework for a resource-based approach to strategy formulation: (a) analyzing the firm's resource base; (b) appraising the firm's capabilities; (c) analyzing the profit-earning potential of the firm's resources and capabilities; (d) selecting a strategy; and (e) extending and upgrading the firm's pool of resources and capabilities.

Further, Grant(1991) argues that a resource-based approach to strategy is concerned not only with the deployment of existing resources and capabilities, but also with the development of the firm's resources and capabilities. In order both to fully exploit a firm's existing stock of resources and capabilities and to develop competitive advantage, the external acquisition of complementary resources and capabilities may be necessary(Grant, 1991). This external acquisition(i.e, outsourcing) is known as filling gaps of resources and capabilities in the strategic management(Stevenson, 1976). Filling gaps of resources and capabilities through

outsourcing strategy not only maintains the firm's stock of resources and capabilities, but also augments resources and capabilities in order to buttress and extend positions of competitive advantage as well as to broaden the firm's strategic opportunity set(Grant, 1991).

The resource-based perspective for outsourcing provides a framework for examining the pool of IS resources and capabilities(i.e., financial condition, people, machinery, facilities) that may or may not suggest implementing a given strategy during the formulation phase. Thus, the resource-based theory may demonstrate the fact that strategies are not universally implementable, but are contingent on having the necessary IS resources and capability base. Therefore, based on the resource-based perspective, outsourcing is a strategic decision which can be used to fill gaps in the firm's IS resources and capabilities(e.g., information quality, IS support quality, staff quality, cost effectiveness, and financial condition).

2. Resource Dependence Theory

While a resource-based approach to strategic management focuses on an internal analysis of a firm in terms of resources and capabilities, resource-dependence theory focuses on the external environment of a firm and argues that all organizations find themselves dependent, in varying degrees, on some elements in their external environments(Aldrich, 1976; Aldrich and Pfeffer, 1976; Pfeffer and Salancik, 1978; and Thompson, 1967). This external dependence is usually based on the external elements' control of some resources which an organization needs, such as land, labor, capital, information, or a specific product or service(Kotter, 1979). Aldrich(1979) states that "environments affect organizations through the process of making available or withholding resources, and organizational forms can be ranked in terms of their efficacy in obtaining resources"(p. 61). Thus, a resource-dependence theory stresses the organizational necessity of adapting to environmental uncertainty, coping with problematic interdependence, and actively managing or controlling resource flows(Pfeffer and Salancik, 1978).

The essence of the resource dependence theory is that organizations often cannot generate necessary resources or capabilities internally; therefore, they enter into exchange relationships with other organi-

zations alter their structures and behaviors to acquire and maintain needed resources (Ulrich and Barney, 1984). The organization is likely to attempt to form a mutually beneficial coalition. "For example, a firm can minimize its uncertainty in supply relationships by engaging in coalition activities such as forming links with influential individuals in supplier firms, becoming partners with such firms in joint ventures, or acquiring key supplier firms" (Ulrich and Barney, 1984, p. 472). Thus, resource dependence theory(Pfeffer and Salancik, 1978), which emphasizes the dependence of organizations on their external environments, provides a useful perspective from which to examine the relationship between an organization's decision to outsource IS functions and that organization's effectiveness. Through outsourcing, an organization can obtain scarce IS human resources(i.e., skilled programming and telecommunication personnel) and technological resources(i.e., network and telecommunication infrastructure).

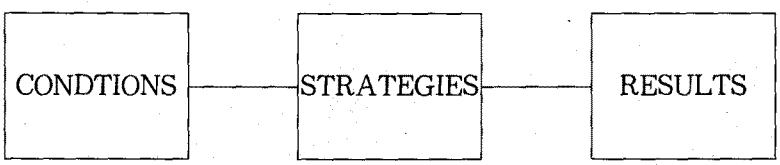
Therefore, based on the resource-dependence perspective, the degree to which organizations outsource their IS functions may vary from firm to firm, since the degree of dependence on external organizations to acquire scarce IS resources and capabilities may vary with the different roles of management.

3. Contingency Perspectives of Strate- gic Management

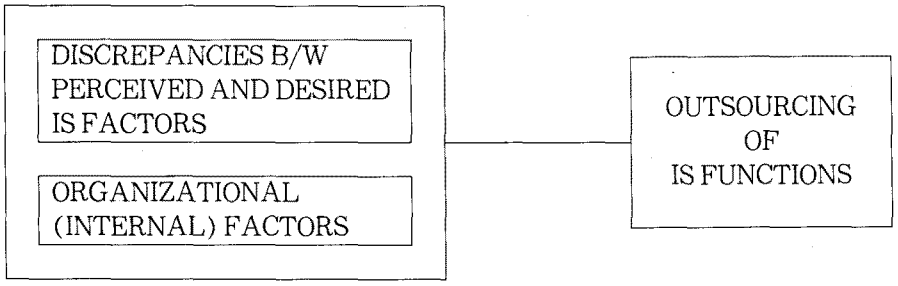
Structural contingency theory has dominated the study of organizational design and performance during the past twenty years(Hofer, 1975; Miles and Snow, 1978; Miller and Friesen, 1978; Ginsberg and Venkatraman, 1985; Drazin and Van de Ven, 1985). It is the perspective underlying the prescribed dual approach to strategic analysis(Grant and King, 1982): environmental threats and opportunities analysis and organizational strengths and weaknesses.

Contingency perspectives of business strategy indicate that the appropriateness of different strategies depends on

〈Figure 2〉 trategy Research Paradigm(Adapted from Fahey & Christensen, 1986)



〈Figure 3〉 The Research Model: A Contingency Model of Outsourcing



the competitive setting of business (Hambrick and Lei, 1985). Further, the perspectives rest on the belief that "no universal set of strategic choices exists that is optimal for all businesses, irrespective of their resource positions and environmental context"(Ginsberg and Venkatraman, 1985, p. 421). Thus, effective strategies are those which achieve a fit or congruence between environmental conditions and organizational factors(Venkatraman and Camillus, 1985; Drazin and Van de Ven, 1985).

Fahey and Cristensen(1986) present a strategy research paradigm(Figure 2) that indicates that the central research question of strategy content is typically some variant of the following: What performance results arise from following specific strategies under different conditions?

Figure 2 provides a useful model for considering the outsourcing of IS functions. If an organization uses the outsourcing option as its strategy, it is reasonable to expect similar contingency influences. Therefore, Figure 2 serves as the basic framework around which a contingency model of outsourcing can be developed.

Ⅳ. RESEARCH MODEL AND HYPOTHESES

A model of outsourcing strategy, which is based on a partial contingency view (conditions and strategies) of the organizational strategy research paradigm as depicted in Figure 2, is shown in Figure 3. The application of contingency theory to managing IS functions provides a useful and operational fraework for the organization(Wetherbe and Whitehead, 1977).

The basic premise of contingency theory as applied in Figure 3 is that outsourcing strategy is only one of several types of economic restructuring by which an organization adapts to the environment(Child,

1987; Clemons and Row, 1989) and that outsourcing has the benefits and drawbacks discussed in the previous chapter. Therefore, there are situations under which outsourcing may or may not be appropriate. These situations include both internal organizational factors and discrepancies in IS factors that are perceived by decision makers as they seek to formulate the outsourcing strategy.

1. Overall Research Model

The first hypothesis seeks to determine whether the contingency(independent) variables influence the change in extent to which an organization outsources IS functions in the research model in Figure 3. As depicted in the model, the outsourcing of IS functions is the change in an organization's extent to outsource IS functions as a strategy. It has a role similar to that of strategy in the contingency strategy research paradigm as shown in Figure 2. Therefore, in the outsourcing decision, discrepancies of IS characteristics and organizational characteristics are expected to have significant influences.

H1: Discrepancies of IS characteristics and organizational characteristics influence the change in an organization's extent to outsource IS functions.

2. Gap in Information Quality

Quality of output information is an important factor to consider in evaluating IS effectiveness(Miller & Doyle, 1987). The fact that information processing requirements of firms are expanding as their competitive environments become more dynamic and volatile strains management's organizational capabilities(Child, 1987). Dearden(1987) suggests that external sources will bridge gaps between information needs and the ability of internal sources to meet these needs at a low cost and high quality. Outsourcing decision is made in order to reduce the discrepancy in the quality of output information in terms of timeliness and accuracy of information (Radding, 1991; Scelsi, 1991; Sweeney and Pollokoff, 1991).

H2: The change in degree of outsourcing is related to the gap of information quality.

3. Gap in Staff Quality

Staff quality or competence is a form of

expertise that is commonly assumed to contribute to IS activities(Weitzel & Graen, 1989). A competent staff is one of the most important success factors in IS effectiveness(Magal and Carr, 1988). However, many companies find it harder to employ and retain skilled personnel and keep up with changing IT(Bargerstock and Swanson, 1991; Hadad, 1991; Hamilton, 1991; Morrall, 1991; Oltman, 1990; Radding, 1991; Salamone, 1991; Slater, 1991; Sweeney and Pollokoff, 1991). Further, the qualifications of IS personnel varies across organizations within the same industry(Cheney and Lyons, 1980), affecting a firm's decision to outsource IS functions. Therefore, the gap in quality of IS staff is expected to affect the change in an organization's extent to outsource IS functions.

H3: The change in degree of outsourcing is related to the gap of staff quality.

4. Gap in IS Support Quality

IS support for users is another important factor to be considered in evaluating IS effectiveness(Miller & Doyle, 1987). The difference in IS support quality among organizations within the same industry affects the change in a firm's extent to outsource IS functions. Thus, outsourcing decision is made in order to reduce the weaknesses of the IS factors in terms of capability and quality of systems required to support user needs(Radding, 1991; Scelsi, 1991; Sweeney and Pollokoff, 1991; Whitehead and O'Sullivan, 1991). The gap in IS support quality, therefore, is expected to affect the change in an organization's extent to outsource IS functions.

H4: The change in degree of outsourcing is related to the gap of IS support quality.

5. Gap in IS Cost Effectiveness

Growth in corporate IS budgets is also slowing(Maglitta, 1991; Wexler, 1990). The important factors for slowed IS spending are organizations' current performance, corporate desire to control IS spending, pressure from competition, expectations of recession, increased spending outside of IS departments, and uncertainties regarding platforms or software.

Faced with IS budgetary pressures, organizations view outsourcing as an expense reduction strategy because (1) it

yields cost savings, (2) it makes IT costs predictable, (3) it develops a framework for technical expertise, and (4) it relieves thrift management from being responsible for an area in which they may be poorly trained(Klein, 1990). Efficient running of IS is a major impetus for the emergence of outsourcing as a strategic tool(Klein, 1990; Morral, 1991; Rifkin, 1991). Therefore, we expect that there will be difference in the gap in IS cost effectiveness among firms with respect to the change in an organization's extent to outsource IS functions.

H5: The change in degree of outsourcing is related to the gap of IS cost effectiveness.

6. Strategic Orientation

Since organizations make outsourcing decisions to gain competitive advantage (Hamilton, 1991; O'Heney, 1991; Verity, 1991; Whitehead and O'Sullivan, 1991), it seems logical to infer a strong relationship between strategic orientation and change in an organization's extent to outsource.

Das, Zahra, and Warkentin(1991) provide a framework linking the dimensions of strategic MIS planning with the Miles and Snow strategic types. In this framework, they argue the following different approaches in obtaining IT resources among defenders, prospectors, and analyzers:

(1) Defenders are expected to favor IT and equipment that are produced internally. Because of their proclivity toward internal sources, defenders may overlook new market development in IT. However, given the unique nature of IT, they may also form limited strategic alliances with external sources for their technology.

(2) Prospectors are expected to preclude the exclusive use of internal sources to meet their IS technology needs due to the diversity of their information needs. Therefore, prospectors are expected to utilize IS technologies that are obtained from multiple sources, both internal and external. Because of their continuing engagement in new businesses, prospectors may emphasize external sources over internal sources in acquiring IT.

(3) Analyzers are expected to make choices typical of defenders in their traditional and stable lines of business, while adopting a strategy typical of prospectors in their newer and more dynamic business endeavors. This may sometimes result in mixed(internal and external) strategies of

acquiring IT.

(4) Reactors are organizations with no distinct competitive strategic orientation. A reactor makes decisions in a random fashion, and its actions are taken in a reactive rather than a proactive way. As a result, there is no reason to include reactors in this research. Based on this discussion, we expect outsourcing of IS functions to be related to the strategic orientations of organizations.

H6: The change in degree of outsourcing is related to the strategic orientation of organizations.

H6a: A prospector is more likely to increase degree of outsourcing IS functions than an analyzer.

H6b: A prospector is more likely to increase degree of outsourcing IS functions than a defender.

H6c: An analyzer is more likely to increase degree of outsourcing IS functions than a defender.

7. Role of IT

Role of IT here refers to the extent to which IT is integrated into the strategy of an organization(Johnston and Carrico, 1988). Thus, the process of determining IT's role focuses attention on what IT can and should do in an organization. Johnston and Carrico (1988) identify a traditional, an evolving, and an integral role in an organization:

(1) The organizations with a traditional role for IT focus IT efforts primarily on improving administrative and managerial IS(e.g., accounting and decision support). They also focus heavily on linkages between functions and between corporate and operating group levels.

(2) The organizations with an evolving role for IT define and develop strategies at the corporate and business unit level without explicitly considering the competitive potential of IT. However, once strategies are defined, IS groups actively seek out opportunities to use IT in order to support the strategies.

(3) The organizations with an integral role for IT display a more proactive orientation toward IT. They use IT to create new products and services, to alter linkages with suppliers and customers, and ultimately to establish new standards of performance in their industries. In changing the competitive patterns in their industries, they also alter the structure, processes, and scope of their own organizations in ways that facilitate continued leadership in

competitive uses of IT. They also focus more attention on external relationships than other organizations.

An organization's IT management practices are contingent upon both the role that IT serves within the organization and the manner by which IT resources are made available to users(Boynton & Zmud, 1987). Thus, we expect outsourcing of IS functions to be related to role of IT in organizations.

H7: The change in degree of outsourcing is related to role of IT.

H7a: A firm with a traditional role for IT is more likely to increase degree of outsourcing IS functions than a firm with an integral role for IT.

H7b: A firm with a traditional role for IT is more likely to increase degree of outsourcing IS functions than a firm with an evolving role for IT.

H7c: A firm with an evolving role for IT is more likely to increase degree of outsourcing IS functions than a firm with an integral role for IT.

8. Gap in Financial Performance

Reduced profits are causing management to look everywhere to increase margins(Hammersmith, 1989). Under conditions of poor business performance, firms often seek to streamline their operations, including selling off or redeploying assets (Harrigan, 1980). When the firm does not perform well vis-a-vis its competition, it needs to re-evaluate the traditional governance types-choices of structural mechanisms(e.g., joint ventures, long-term contracts)-for all its functions(Loh and Venkatraman, 1991). IT governance(specially, outsourcing) is a strategic choice pertaining to development partnerships to exploit IT capabilities and services(Henderson and Venkatraman, 1992).

Further, outsourcing is related to a firm's financial condition and performance (Radding, 1991; Wilder, 1991). Therefore, we expect an organization to deploy outsourcing when there is a gap between actual and desired performance of the organization.

H8: The change in degree of outsourcing is related to the gap in an organization's financial performance.

V. RESEARCH METHODOLOGY

1. Operationalization of Variables

Measures of discrepancies are adopted from an approach used by Doll and Torkzadeh (1989). They measure end-user involvement with respect to the actual and desired involvement in system development activities. For this research, discrepancies in information quality, IS staff quality, IS support quality, and IS cost effectiveness are described in terms of these actual and desired levels.

Quality of output information delivered by IS was measured by the short form of measures for user information satisfaction suggested by Baroudi and Orikowski (1988). For IS staff quality and IS support quality we adopted the instrument designed and tested by Miller and Doyle (1987). For IS cost effectiveness we adopt the measure of perceived value of investment in each IS function instead of computing actual costs and benefits.

Strategic orientation was measured by The Miles and Snow (1978) typology of strategic orientation, which has been used in a variety of empirical studies and is also validated by a recent study (Shortell and Zajac, 1990). Role of IT was measured by the typology of Johnston and Carrico (1988), who have described in three stages the changing role of IT in organizations by the extent to which IT is integrated into strategy: (a) Stage 1 Traditional: IT supports operations but is not strategy related; (b) Stage 2 Evolving: IT supports strategy; (c) Stage 3 Integrated: IT is integral to strategy. Financial performance was measured by one of two dimensions of business performance developed by Venkatraman (1989), who uses two dimensions - growth dimension and profitability dimension-in order to test the predictive validity of his measurement of strategic orientation.

Outsourcing of IS functions, the dependent variable in research model, refers to the change in an organization's degree of outsourcing. This change is measured by the difference between the current outsourcing budget and that of three years ago.

The rationale for choosing the period of three years is as follows: (1) Three years ago, Kodak outsourced a data center operation to IBM; after this contract, Outsourcing, for many companies, emerged as one of the top ten issues for success (or survival) in 1990s (Ludlum, 1989-90). (2) Diffusion of outsourcing after the Kodak contract became more pronounced(Loh and Venkatraman, 1991a). (3) It is reasonable for respondents to recall their outsourcing

strategy considered three years ago. The outsourcing budget in each case is expressed as a percentage of the firm's total IS budget. A similar approach is used in a study by Loh and Venkatraman (1991b; 1992). IS functions of organizations can be divided into five types: function 1: applications development and maintenance; function 2: systems operations; function 3: telecommunications and networks management; function 4: end user support; and function 5: systems planning and management (Borovits, 1984; Lucas, 1989; Olson and Chervany, 1980). Both the present and earlier outsourcing budgets are calculated as follows: the percentage of the total IS budget allocated for a function is multiplied by the percentage of that function's budget allocated for outsourcing. The sum for all five functions becomes the measure of the degree of outsourcing. Subtracting the sum of three years ago from the present sum yields the change in outsourcing budget (COB).

$$COB = \sum_{i=1}^{5} \beta_i Y_i - \sum_{i=1}^{5} \alpha_i X_i$$

where:

COB = Change in outsourcing budget as % of total IS budget

β_i = IS budget allocated for function i as % of total IS budget at the present time

Y_i = Outsourcing budget for function i as % of total budget for function i at the present time

α_i = IS budget allocated for function i as % of total IS budget three years ago

X_i = Outsourcing budget for function i as % of total budget for function i three years ago

2. Data Collection

Data were collected with a questionnaire through a mail survey. Survey methods provide probability sampling, standardized measurement, and information available from no other source (Fowler, 1988) and is an appropriate form for this stage of research in outsourcing. Recent studies on outsourcing (Apte, 1990; Apte and Winniford, 1991; Buck-Lew, 1992; Due, 1992; Klepper and Hartog, 1992; Loh and Venkatraman, 1991b; McLellan, 1991; Schiffman and Loftin, 1991; Sinensky and Wasch, 1992) and trade publications have given us insights into the IS contingency factors that may be relevant for

outsourcing strategy.

The unit of analysis for this research is an organization, which may be a corporation, a business unit, a subsidiary, or a division served by an IS department. As used in this research, outsourcing strategy of an organization may include any of the following IS functions: applications software development and maintenance, systems operations, networks and telecommunications management and maintenance, end user support, and systems planning and management.

The questionnaire instrument was reviewed by several IS faculty through an iterative process. It was then tested with six staff members in the division of information resources at the College of Business Administration. Those chosen to review the instrument worked in such areas as technical support and database administration or were systems programmers and network administrators. Their suggestion were discussed and incorporated into the questionnaire.

The instrument was then pretested with seven top IS executives in the Columbia area and one outside Columbia. Each executive provided feedback regarding the wording of items, their understandability, and the overall organization of the instrument. Feedback was evaluated and changes were made after meeting with each executive. The pretests resulted in several changes in the wording of items to improve clarity. The pretests were concluded when there were no further substantive comments from the interviews. A final review was then made by members of the dissertation committee.

The survey questionnaire[2] was mailed to 1000 U.S. companies on 3 August 1992. The following-up questionnaire was mailed to those who had not responded about three weeks later, on 31 August 1992. The questionnaire was addressed to the top executive in charge of Information Systems. The names of these individuals were obtained from the Spring 1992 edition of the Directory of Top Computer Executives published by Applied Computer Research, Inc. The package mailed to all companies in the survey included cover letter, questionnaire, and self addressed business reply envelope. Despite follow-up efforts, 10 questionnaires were undeliverable because of bad addresses. Sixteen companies wrote or called to decline participating in the study because of time and their policy regarding surveys. Five incomplete ques-

2) Survey questionnaire is available upon request.

tionnaires were unusable. Thus, 188 usable responses were received representing a response rate of 19%.

3. Responding Sample Characteristics

The industry representation of respondent companies indicates that a large proportion of these companies are manufacturers or involve in banking, insurance, healthcare, and utilities. Further, the responding companies are quite large in terms of total annual sales. 63 of 167 companies have an annual sale of $1 billion or above, and only 23 have sales below $100 million. The number of employees of the responding companies is also quite large. Of the 180 companies responding to the questionnaire, 111 have 2000 or more employees, and only 17 have fewer than 300 employees. The characteristics the IS departments in these companies are quite big (75 of 166 companies have IS budgets that are equivalent to 3% or more of total sales and 113 of 178 companies have 50 or more IS employees).

VI. RELIABILITY AND VALIDITY ANALYSIS

Reliability is the degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects. That is, reliability refers to the accuracy (consistency and stability) of measurement by the instrument (Isaac and Michael, 1981) or repeatability of an assessment over a variety of conditions (Nunnally, 1978).

Variables with composite measures were evaluated for their internal consistency through the Cronbach's Alpha measure. The higher the Cronbach's Alpha value, the greater is the internal consistency of the items making up a composite measure. Nunnally (1978) suggests that a value of 0.6 or higher is acceptable. The Alpha's for the variables with composite measures ranged from 0.86 to 0.89. These score are shown in Table 1.

Variables with computational measures are evaluated for their internal consistency through correlations with alternative measures. Since the change in degree of outsourcing is measured by self-typing responses, alternative measures are added in the instrument. These measures are a single question for asking the outsourcing budget, expressed as a percentage of the firm's total IS budget, in current and three years ago. The resulting correlations, shown in Table 2, range from 0.85 to 0.90.

〈Table 1〉 Reliability Analysis for Composite Measures

Construct measured	Number of Items	Cranbach alpha
Gaps in information quality	5	0.8865
Grps in support quality	5	0.8883
Gaps in staff quality	5	0.8634
Gaps in cost effectiveness	5	0.8666
Gaps in financial performance	5	0.8778

〈Table 2〉 Reliability Analysis for Composite Measures

Construct measured	Correlation with Alternative
Degree of Outsourcing(current)	0.8544*
Degree of Outsourcing(3years ago)	0.9030*
Change in Degree of Outsourcing	0.8923*

These are all significant at the level of 0.01.

Content validity implies that all the aspects of the construct/trait being measured are considered by the empirical measure(Churchill, 1979; Kerlinger, 1986). Content validity of the survey instrument is satisfied by constructing it with operationalizations that have been utilized by other researchers, adopting suggestions in the literature, and pretesting with experts in the IS field(Kerlinger, 1986).

Since empirical studies(i.e., Loh and Venkatraman, 1991a; 1991b; 1992) of outsourcing are only just beginning, all suggestions of relevant variables in the literature have been adopted to achieve generalizability and unbiasedness, although simplicity and precision are also important criteria(Blalock, 1982). Inclusion of all potentially relevant variables also enables this research to highlight key variables and allow other researchers to build on the foundation established here.

Construct validity is the degree to which the empirical definition of a construct corresponds with a conceptual definition of the construct(Churchill, 1979; Kerlinger, 1986). It consists of two major validity concepts: convergent validity and discriminant validity.

Convergent validity is the degree to which multiple attempts to measure the same concept are in agreement(Campbell and Fiske, 1959). In this research convergent validity is evaluated by measuring the correlation of each item representing

〈Table 3〉 Inter-Item Correlations

Variables	Deleted Items	Correlation with Total
Gaps in information Quality	Reliability	0.7944
	Relevancy	0.5909
	Accuracy	0.7834
	Precision	0.7323
	Completeness	0.7530
Gaps in support quality	Prompt processing	0.7522
	Short lead time for new systems	0.7666
	Responsiveness to changing	0.8309
	Support for new proposals	0.6870
	Flexibility of data & reports	0.6181
Gaps in staff quality	User-oriented systems analysts	0.7384
	Competence of systems analysts	0.7240
	Technical competence of IS staff	0.6965
	Effort to create new systems	0.6196
	Positive attitude toward users	0.6648
Gaps in cost effectiveness	Applications development & maintenance	0.6763
	Systems operations	0.7343
	Telecom/network management & maintenance	0.7406
	End user support	0.6771
	Systems planning & management	0.6316
Gaps in financial performance	Return on corporate investment	0.6348
	Net profit position	0.8139
	ROI position	0.8481
	Return on sales	0.7609
	Financial liquidity position	0.4994

the construct with the aggregate measure for that construct less the focal item(Ives, Olson and Baroudi, 1983; Kerlinger, 1986). This approach assumes the total score to be valid; thus the extent to which the item correlates with the total score is indicative of construct validity for the item. Table 3 shows the inter-item correlations within each of research variables. All of the correlations are positive and significant at the 0.001 level. Discriminant validity is the degree to which a construct differs from other constructs and is usually verified through factor analysis(Kerlinger, 1986). Factor analyses for discriminant validity were performed with respect to each domain of the research model. The cut-off for the number of factors is the

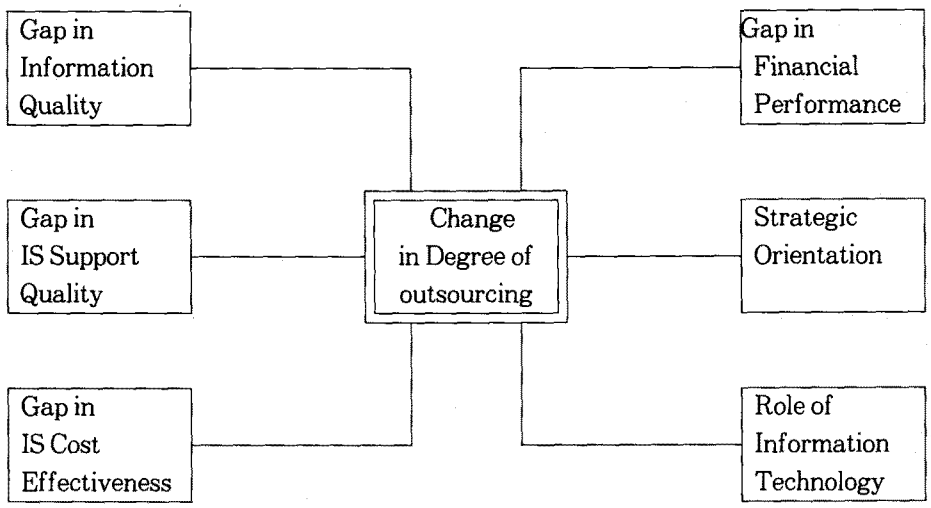
〈Table 4〉 Factor Analysis of Independent Variables

Factors (percent of varianc explained)	Items	Loadings
Factor 1 : Gaps in support quality (20.5)	Prompt processing	0.76402
	Shart lead time for new systems	0.75416
	Responsiveness to changing	0.85335
	Support for new proposals	0.58060
	Flexibility of data & reports	0.54089
	User-ariented systems analysts	0.64492
	Effort to create new systems	0.64093
Factor 2 : Gaps in cost effectiveness (14.2)	Applications development & maintenance	0.69163
	Systems operations	0.71336
	Telecom/network management & maintenance	0.82499
	End user support	0.63084
	Systems planning & management	0.53100
Factor 3 : Gaps in information quality (13.8)	Reliability	0.76931
	Relevance	0.50384
	Accuracy	0.88539
	Precision	0.69818
	Completeness	0.65979
Factor 4 : Gaps in financial performance(13.0)	Return on corporate investment	0.61238
	Net profit position	0.89489
	ROI position	0.93815
	Return on sales	0.79774

widely accepted criteria of an eigenvalue of one. In each case, quality, and gap in IS cost effectiveness) and gap in organizational financial performance. Factor analysis with varimax rotation reveals only four factors as shown in Table 4, even though we expected five factors. Two of the items measuring gap in IS staff quality loaded onto factor 1. These two items were found to relate to items measuring gap in IS support quality. The rest of items were dropped since loadings were less than 0.50.

Furthermore, although factor 1 was new, it was appropriate to keep the same variable name as gap in IS support quality. One of the items measuring gap in financial performance was also dropped because of a low loading(less than 0.50). Since one of the independent variables, gap in IS staff quality, no longer exists, it was necessary to modify research model with

〈Figure 4〉 The Modified Research Variables of Research Model in Figure 3



respect to research variables. The remaining variables, shown in Figure 4, were used for testing research hypotheses. Research hypothesis(H3) relating to gap in IS staff quality was also dropped.

Ⅶ. RESULTS

1. Testing Overall Research Model

For the validity of test results, normality assumption and multicollinearity of the regression equation were checked. Based on the residuals of the regression equation, normality is checked by the Shapiro-Wilk W statistic(Shapiro and Wilk, 1965). The value of the W statistic is very high at 0. 804, which indicates that the data are a sample from a normal distribution (Schlotzhauer and Littell, 1987).

Hypothesis 1 is that discrepancies of IS characteristics and organizational characteristics influence the change in an organization's extent to outsource IS functions. The hypothesis relates gaps in IS factors and organizational factors to the change in an organization's extent of outsourcing. As the focus is a test of the overall model, the key concern is whether the overall linear equation is significant(Dowdy and Wearden, 1991; Green, 1978). Analysis of covariance(ANCOVA) is performed to test the overall significance of model, since the model contains both continuous and categorical variables. The general linear equation tested is Outsourcing=f(gaps IS factors, organizational factors).

The results are shown in Table 5. The

〈Table 5〉 Analysis of Covariance of Independent Variables on Outsourcing of IS Functions

Overall Model	R^2	Adjusted R^2	F Value	p-value
	0.24	0.21	5.31	0.0001
Partial Effects of Independent Variables	Gaps in informaton quality		0.04	0.8516
	Gaps in support quality		17.82	0.0001
	Gaps in cost effectiveness		9.78	0.0021
	Gaps in financial performance		0.64	0.4255
	Strategic orientation		0.93	0.4277
	Role of information technology		6.55	0.0019

〈Table 6〉 The Results of Tests on Hypotheses for the Effect of gaps in IS Factors on Degree of Outsourcing: Using Simple Regression Analysis.

The Hypotheses	Test Statistics	p-value	Results
Hypothesis 2	$\hat{F}=6.234$	0.0134	Supported *
Hypothesis 4	$F=18.51$	0.0001	Supported *
Hypothesis 5	$F=0.163$	0.6872	Not supported

* significance<0.05

overall equation is significant at the 0.05 level, with an adjusted R square of 0.21. Therefore, hypothesis 1 is supported.

2. Testing for Hypotheses Relating to IS Factors

Table 6 summarizes the results of tests of hypotheses for the effect of the gap in each IS variable on the organization's extent of outsourcing IS functions. From Table 6 the significant findings at the significance level of 0.05 are as follows:

(a) The change in degree of outsourcing is associated with the gap in information quality.

(b) The change in degree of outsourcing is associated with the gap in IS support quality.

3. Testing for Hypotheses Relating to Organizational Factors

In this section we report our findings about the sets of relationships between organizaadtional factors(gap in financial performance, strategic orientation, and role of information technology) and outsourcing.

The effect the organizational factors has on the outsourcing is discussed using correlation analysis and analysis of variance (ANOVA) between organizational factors and outsourcing. Using multiple comparisons analyses, we follow this by examining the effects different types of strategic ori-

〈Table 7〉 Descriptive Statistics of Types of Strategic Orientation and Role of Information Technology

Variables	Types	Mean of Outsourcing	Standard Deviation
Strategic Orientation	Defender	0.0505	0.1551
	Prosperctor	0.0717	0.1557
	Analyzer	0.0490	0.1045
Role of Information Technology	Traditional	0.1502	0.2718
	Evolving	0.0423	0.0994
	Integral	0.0259	0.0667

〈Table 8〉 The Results on tests of Hypotheses for the Effect of the Organizational Factors on Degree of Outsourcing: Using One-Way Analysis of Variance(H6 and H7) and Simple Regression Analysis(H8)

The Hypotheses	Test Statistics	p-value	Results
Hypothesis 6	F=0.380	0.8896	Not supported
Hypothesis 7	F=9.270	0.0001	Supported *
Hypothesis 8	F=3.840	0.0518	Supported *

* significance<0.05

* * significance<0.10

〈Table 9〉 Multiple Pair-Wise Comparison of Mean Outsourcing Degree Scores of Traditional, Evolving, Intergral Roles of IT : Using Scheffe's Test

Comparisons	Traditional and Integral roles	Traditional and Evolving roles	Evolving and Integral rales
Degree of Outsourcing	Significant *	S ignificant *	Not significant

* significance<0.05

entations and different types of IS roles have on the outsourcing of IS functions.

Table 7 provides descriptive statistics for both the three types of strategic orientation and the three roles of information technology in terms of the mean change in degree of outsourcing and its standard deviation. Based on the significance level of 0.05 or• 0.10, Table 8 summarizes the results of tests of hypotheses for the effects of the gap in organizational financial performance, strategic orientation, and role of information technology on the organization's degree of outsourcing. For example, the mean changes in degree of outsourcing for the roles of IT(0.1502, 0.0423, and 0.0259) are compared with one another(refer to Table 7).

From Table 8 and 9 the significant findings are as follows:

(a) The change in degree of outsourcing is associated with the role of information technology.

(b) A firm with a traditional role for IT is more likely to outsource IS functions than a firm with an integral role for IT.

(c) A firm with a traditional role for IT is more likely to outsource IS functions than a firm with an evolving role for IT.

(d) The change in degree of outsourcing is associated with the gap in an organization's financial performance.

Ⅷ. DISCUSSION

The results of the test for hypotheses relating to IS factors empirically confirmed earlier descriptive arguments that information quality(Dearden, 1987; Radding, 1991; Scelsi, 1991; Sweeney and Pollokoff, 1991) and IS support quality (Hadad, 1991; Whitehead and O'Sullivan, 1991) are important facilitators of an organization's degree of IS outsourcing. Thus, outsourcing may bridge gaps between information needs and the ability of internal sources to meet user needs at a low cost and high quality(Dearden, 1987). Further, since competitive environments become more dynamic and volatile, timely and accurate information is much more important for organizations(Child, 1987), and the reduction of the gap in information quality is much more important for them.

Outsourcing may also bridge gaps between IS support quality and the capability of internal sources to provide user needs promptly. For example, processing capabilities of requests for change to existing systems and responsiveness to changing user needs are important IS support qualities for users. However, the result of the test for hypotheses relating to the gap in IS cost effectiveness indicates that the change in an organization's degree of IS outsourcing may not be determined by the gap in IS cost effectiveness. This finding is unexpected since one of the most important reasons for outsourcing is cost savings(Klein, 1990; Morral, 1991; Rifkin, 1991). However, the gap in IS cost effectiveness plays a marginal role in the full research model(refer to Table 5).

The findings described above indicate that the degree to which an organization outsources IS functions may be determined by the role of IT in the organization as well as the gap in organizational financial performance. Organizations are more like-

ly to outsource IS functions when their IS functions are performing a traditional role in the business. This finding confirms findings from another survey, in which 38 % of the responding companies indicated that the most important factor that would prevent a company from outsourcing a function is that the function is too strategic or mission-critical(Thobe, 1992). An IS function that provides a competitive advantage to its company will not be outsourced(Hummel, 1993; Meyer, 1994).

A gap in organizational financial performance also affects an organization's degree of outsourcing. This relationship supports a similar finding by Loh and Venkatraman(1992), who reject the hypothesis that business financial performance is negatively related to IT outsourcing. Our findings indicate that outsourcing may be used as a strategic option to reduce the gap in an organization's financial performance. Indeed, one of the top ten tips recommended by a trade periodical for IS survival in the 1990s is to consider outsourcing: "Tougher competition and profit pressures will force more IS executives to take a hard look at outsourcing functions and services that traditionally have been done in-house" (Ludlum, 1989-90, p. 14).

Ⅸ. LIMITATIONS

This research deals with a relatively new phenomenon. While we feel that the study contributes to academic and practical areas, it also has some limitations that need to be mentioned.

(1) This study has concentrated on companies listed in the Directory of Top Computer Executives. It remains to be seen whether the findings can be generalized to companies that are not listed in the directory.

(2) The research uses a questionnaire method for data collection that relies on a single respondent for each company. As a result, it does not capture the strategic orientation of each company to the extent that a case-study or a field study involving multiple respondents (i.e., CEO and CIO) from each company would.

(3) Even though we made every effort to design a questionnaire that would reduce response bias, such a bias cannot be avoided entirely due to the post hoc nature of research.

Ⅹ. CONCLUSIONS

The research has examined the change

in degree of IS outsourcing by firms and factors influencing the change. Significant findings in this research are summarized as follows: (a) This study found support for research model in Figure 3. (b) The change in degree of IS outsourcing is determined by gaps in information quality, IS support quality, IS cost effectiveness, and financial performance and by the role of IT among IS and organizational factors. These findings reflect current developments in the real world where organizations are beginning to pay close attention to how their IS functions are managed.

참 고 문 헌

Aldrich, H. (1976). Resource dependence and interorganizational relations: Relations between local employment service office and social services sector organizations. Administration and Society, 7(4), 419–455.

Aldrich, H. (1979). Organizations and Environments. Englewood Cliffs, NJ: Prentice-Hall.

Aldrich, H. & Pfeffer, J. (1976). Environments of organizations. Annual Review of Sociology, 2, 79105.

Apte, U. (1990). Global Outsourcing of Information Systems and Processing Services. The Information Society. 7(4), 287–303.

Apte, U. & Winniford, M. (1991). Global Outsourcing of Information Systems Functions: Opportunities and Challenges. In M. Khosrowpour (Ed.), Proceedings of 1991 Information Resources Management Association International Conference (pp. 58–67).

Memphis, Tennessee: Idea Group Publishing.

Aucoin, P. (1991). Internalizing the Vendor's Resources: Outsourcing in the 1990s (Critical Technology Report No. C-6-1). Carrollton, Texas: Chantico Publishing Co., Inc.

Bailey, J.E. & Pearson, S.W. (1983). Development of a tool for measuring and analyzing computer user satisfaction. Management Science, 29 (5), 530–545.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. Journal of Management. 17(1), 99–120.

Baroudi, J.J. & Orlikowski, W.J.(1988). A short

-form measure of user information satisfaction: A psychometric evaluation and notes on use. Journal of Management Information Systems, 4 (4), 44-59.

Benko, C.(1993). Outsourcing evaluation. Information Systems Management. 10(2), 45-50.

Borovits, I.(1984). Management of computer operations. Englewood Cliffs: Prentice-Hall, Inc.

Boynton, A.C. & Zmud, R.W.(1987). Information technology planning in the 1990s: Directions for practice and research. MIS Quarterly, 11(1), 59-71.

Buck-Lew, M.(1992). To outsource or not?. International Journal of Information Management, 12(1), 3-20.

Child, J.(1972). Organizational structure, environment and performance: The role of strategic choice. Sociology, 6(1), 1-22.

Child, J.(1987). Information Technology, Organization, and the Response to Strategic Challenges. California Management Review, 30(1), 33-50.

Churchill, G.A.(1979). A paradigm for developing better measures of marketing constructs. Journal of Marketing Research, 16(1), 64-73.

Clark, Jr. T. D.(1992). Corporate systems management: an overview and research perspective. Communications of the ACM, 35(2), 61-75.

Clemons, E K. & Row, M. C.(1989). Information technology and economic reorganization. In J. DeGross, J. Henderson, & B. Konsynski(Eds.), Proceedings of the Tenth International Conference on Information Systems(pp. 341-351). Boston, Massachusetts: ICIS.

Clermont, P.(1991, September). Outsourcing without guilt. Computerworld, p. 9.

Das, S.R., Zahra, S.A., & Warkentin, M.E. (1991). Integrating the content and process of strategic MIS planning with competitive strategy. Decision Sciences, 22(5), 953-984.

DATAPRO(1991), Working with outside service providers. Managing Information Technology: Third-party service & support. Datapro Information Services Group. 1-8.

Dearden, J.(1987). The withering away of the IS organization. Sloan Management Review, 28(4), 87-91.

DeMuth, J.(1990, April). Outsourcing a data center raises pros and cons. Savings Institutions, pp. 60-61.

Doll, W. J. & Torkzadeh, G.(1989). A discrepancy model of end-user computing involvement. Management Science, 35(10), 1151-1171.

Dowdy, S. & Wearden, S.(1991). Statistics for research(2nd ed.). New York: John Wiley & Sons.

Drazin, R. & Van de Ven, A.H.(1985). Alternative forms of fit in contingency theory. Administrative Science Quarterly, 30(4), 514–539.

Due, R.(1992). The real costs of outsourcing. Journal of Information Systems Management, 9 (1), 78–81.

Duffy, C.A.(1991, November). Hidden costs can undermine savings from outsourcing. Computerworld, p. 109.

Elam, J. J.(1988). Establishing cooperative external relationships. In J. Elam, M. Ginzberg, P. Keen, & R. Zmud(Eds.), Transforming the IS organization(pp. 83–98). Washington, DC: ICIT Press.

Gantz, J.(1990). Outsourcing: Threat or salvation?. Networking Management, 8(10), 24–40.

Gardner, E. (1991). Going on line with outsiders. Modern Healthcare, 21(28), 35–47.

Ginsberg, A. & Venkatraman, N. (1985). Contingency perspectives of organizational strategy: A critical review of empirical research. Academy of Management Review, 10(3), 421–434.

Grant, J. & King, W.R. (1982). The logic of strategic planning. Boston: Little, Brown and Company.

Grant, R. M. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. California Management Review. 33(3), 114–135.

Hadad, H. (1991, August). The mark of a good temp help firm: Reliability. Office, pp. 34, 36.

Hair, J.F. Jr., Anderson, R.E., Tatham, R.L. & Grablowsky, B.J. (1979). Multivariate data analysis with readings. Tulsa, OK: Petroleum Publishing Company.

Hambrick, D. C. & Lei, D. (1985). Toward an empirical priorization of contingency variables for business strategy. Academy of Management Journal, 28(4), 763–788.

Hamilton, D. (1991). Why outsourcing is in. Banking Software Review, 16(1), 13–15.

Hammersmith, A.G. (1989, September). Slaying the IS dragon with outsourcery. Computerworld, pp. 89–93.

Harrigan, K. R. (1980). Strategies for declining business. Lexington: Lexington Books.

Hitt, M. & Ireland, D. (1986). Relationships

among corporate level distinctive competencies, diversification strategy, corporate strategy and performance. Journal of Management Studies, 23 (4), 401-416.

Hofer, C.W. (1975). Toward a contingency theory of business strategy. Academy of Management Journal, 18(4), 784-809.

Hofer, C.W. & Schendel, D. (1978). Strategy formulation: Analytical concepts. St. Paul: West Publishing. Huff, S.L. (1991). Outsourcing of information services. Business Quarterly, 55(4), 62 -65.

Hummel, E. (1993). Prevent total outsourcing. Journal of Systems Management. 44(7), 29-30.

Isaac, S. & Michael, W.B. (1981). Handbook in research and evaluation (2nd ed.). San Diego, CA: EdITS Publishers.

Jemison, D.B. (1981). The importance of an integrative approach to strategic management research. Academy of Management Review, 6 (4), 601-608.

Johnston, H. R. & Carrico, S. R. (1988). Developing capabilities to use information strategically. MIS Quarterly, 12(1), 37-50. Johnston, J. (1984). Econometric methods. New York: McGraw-Hill.

Keen, P.G.W. (1980). MIS research: Reference discipline and a cumulative tradition. In E.R. McLean (Ed.), Proceedings of the First International Conference on Information Systems (pp. 9 -18). Philadelphia, PA: ICIS. Kelly, J. (1990). Outsourcing: Who pulls the strings. Datamation, 36(18), 103-106.

Kerlinger, F.N. (1986). Foundations of behavioral research (3rd ed.). Fort Worth: Holt, Rinehart and Winston, Inc.

Ketler, K. & Walstrom, J. (1993). The Outsourcing decision. International Journal of Information Management. 13(6), 449-459.

Klein, M.M. (1990). Questions to ask before you sharpen the budget knife. Bottomline, 7(3), 32-37.

Klepper, R. & Hartog, C. (1992). Some determinants of MIS outsourcing behavior. In P. Koorevaar, J. Ooninex & P. Ribbers (Eds.), Handbook of bestuurlijke informatiekunde. Samson: The Netherlands.

Kotter, J. P. (1979). Managing external dependence. Academy of Management Review, 4(1), 87-92.

Loh, L. & Venkatraman, N. (1991a).' Outsourcing' as a Mechanism of Information Technology Governance: A Test of Alternative

Diffusion Models. Working Paper No. BPS 3271-91, Massachusetts Institute of Technology, Alfred P. Sloan School of Management, Cambridge.

Loh, L. & Venkatraman, N. (1991b). 'Outsourcing' as a Mechanism of Information Technology Governance: A Cross-Sectional Analysis of Its Determinants. Working Paper No. BPS 3272-91, Massachusetts Institute of Technology, Alfred P. Sloan School of Management, Cambridge.

Loh, L. & Venkatraman, N. (1992). Determinants of information technology outsourcing. Journal of Management Information Systems, 9 (1), 7-24.

Magal, S.R. & Carr, H.M. (1988). An investigation of the effects of age, size, and hardware option on the critical success factors applicable to information centers. Journal of Management Information Systems, 4(4), 60-76.

Maglitta, J. (1991, January). Squeezing more from IS dollars. Computerworld, pp. 2, 4.

Mangan, T. & Carlini, J. (1991, July). Is outsourcing a savvy more for users?. Network World, pp. 29, 43.

Meyer, N. (1994). A sensible approach to outsourcing. Information Systems Management. 11(4), 23-27.

Miles, R. & Snow, C. (1978). Organizational strategy, structure and process. New York: McGraw-Hill.

Miller, D. & Freisen, P.H. (1978). Archetypes of strategy formulation. Management Science, 24 (5), 921-933.

Miller, J. & Doyle, B.A. (1987). Measuring the effectiveness of computer-based information systems in the financial services sectors. MIS Quarterly, 11(1), 107-124.

Morall, K. (1991). Credit card processing: Now, even big issues are turning to outsiders. Credit Card Management, 4(1), 3A-7A.

Nunnally, J.C. (1978). Psychometric Theory. New York: McGraw-Hill.

O'Heney, S. (1991, July). Outsourcing solutions to the DP puzzle. Bankers Monthly, pp. 26-28.

Penrose, E. T. (1959). Theory of the Growth of the Firm. Oxford: Blackwell.

Pfeffer, J. & Salancik, G.R. (1978). The external control of organizations. Boston: Pittman.

Porter, M.E. (1981). The contributions of industrial organization to strategic management. Academy of Management Review, 6(4), 609-620.

Radding, A. (1991, January). Systematics helps maine thrift grow. Bank Management, p. 75.

Rifkin, G. (1991, August). The in-depth interview: Max Hopper. Computerworld, pp. 65-68.

Rubin, P.H. (1973). The Expansion of Firms. Journal of Political Economy, 81(4), 936-949.

Salamone, S. (1991, June). Survey: Drawing a bead on net managers' top concerns. Network World, pp. 1. 46-47, 103-107.

Scelsi, P. (1991, February). The freight payment outsourcing solution. Distribution, pp. 32-36.

Schendel, D. & Hofer, C. W. (Eds.). (1979). Strategic Management: A New View of Business Policy and Planning. Boston: Little, Brown & Company.

Schiffman, S. & Loftin, R. (1991). Outsourcing of Information Systems Services. In S. Melnyk (Ed.), Proceedings of 1991 Decision Sciences Institute Annual Meeting. (pp. 922-925). Miami Beach, Florida: Decision Sciences Institute.

Schlotzhauer, S.D. & Littell, R.C. (1987). SAS system for elementary statistical analysis. Cary, NC: SAS Institute Inc.

Shapiro, S.S. & Wilk, M.B. (1965). An analysis of variance test for normality (complete samples). Biometrika, 52(3), 591-611.

Shortell, S.M. & Zajac, E.J. (1990). Perceptual and archival measures of Miles and Snow's strategic types: A comprehensive assessment of reliability and validity. Academy of Management Journal, 33(4), 817-822.

Sinensky, A. & Wasch, R. (1992). Understanding outsourcing: A strategy for insurance companies. Journal of Systems Management, 43(1), 32-36.

Slater, R.B. (1991, April). For banks, outsourcing is in. Bankers Monthly, pp. S12-S15.

Stevensen, H. H. (1976). Defining corporate strengths and weaknesses. Sloan Management Review, 17(3), 51-68.

Sweeney, J.P. & Pollokoff, A.M. (1991, January/February). Outsourcing revisited: New ways to develop your information asset. Healthcare Executive, pp. 16-17.

Thobe, D. (1992). Who's minding the shop? BCR's survey on outsourcing. Business Communications Review, 22(5), 22-26.

Thompson, A. A. & Strickland, A. J. (1983). Strategy formulation and implementation. Dallas: Business Publications.

Thompson, J. D. (1967). Organizations in action. New York: McGraw-Hill.

Ulrich, D. & Barney, J. B. (1984). Perspectives in organizations: Resource dependence, efficiency, and population. Academy of Management Review, 9(3), 471-481.

Venkatraman, N. (1989). Strategic orientation of business enterprises: The construct, dimensionality, and measurement. Management Science, 35(8), 942-962.

Venkatraman, N. & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. Academy of Management Review, 11(4), 801-814.

Verity, J.W. (1991, April). Why "systems integration" sounds like poetry to IBM. Business Week, pp. 83-84.

Wagner, J.L. (1992). Issues in outsourcing. In M. Khosrowpour (Ed.), Emerging Information Technologies for Competitive Advantage and Economic Development. (pp. 214-217). Harrisburg, PA: IDEA Group Publishing.

Walker, G. (1988). Strategic sourcing, vertical integration, and transaction costs. Interfaces, 18 (3), 62-73.

Weitzel, J. R. & Graen, G. B. (1989). System development project effectiveness: Problem-solving competence as a moderator variable. Decision Sciences, 20(3), 507-531.

Wetherbe, J.C. & Whitehead, C.J. (1977). A contingency view of managing the data processing organization. MIS Quarterly, 1(1), 19-25.

Wexler, J.M. (1990, December). Recession fears trim '91 budget growth. Computerworld, pp. 1, 6.

Whitehead, B. & O'Sullivan, B. (1991, June). When to say "Yes" or "No" to outsourcing. ABA Banking Journal, pp. 65, 68.

Wilder, C. (1989, December). Outsourcing: Fad or fantastic?. Computerworld, p. 8.

Wilder, C. (1991, January). New outsourcing deals for IBM. Computerworld, p. 12.

◇ 저자소개 ◇

저자 천면중은 계명대 경영학과를 졸업하고 Indiana State University에서 경영학석 사, University of South Carolina에서 MIS 전공으로 경영학 박사학위를 취득하고 현 재 울산대학교 경영정보학과 조교수로 재직하고 있다. Information and Management, Data Base, Journal of Database Administration, European Journal of Information Systems, Information Systems Journal 등 국내외 학술지 및 학회에 많은 논문을 발표 하였다. 주요 연구관심분야는 정보자원관리. 정보시스템의 아웃소싱, Business Process Reengineering 그리고 품질정보시스템(QIS)이다.