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THE ECONOMIC IMPACT OF STRATEGIC INFORMATION SYSTEMS (SIS): A STUDY OF THE COMMERCIAL BANKING INDUSTRY IN THE U.S.

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Abstract

Information systems researchers have primarily relied on contingency models and frameworks to better understand how firms can use the capabilities of information technology (IT) and thus take advantage of opportunities, or protect themselves from the threats of the environment. The results of that dominant research effort have advanced knowledge regarding the external impacts of IT, but have not helped very much to create explanatory models that deal with the interactions between the IT-dependent elements of organizations and with the economic impact of those interactions.

This paper suggests, develops and tests such an explanatory and predictive model of IT-BASED economic impact by distinguishing three types of *organizational systems integration* that impact the performance of US commercial banks: *Technological Integration, Functional Integration,* and *Strategic Integration*.

The results of this study yield some useful set of guidelines: most interesting is the role of consistency between an organization's business and strategic information systems (SIS) plans to improve overall firm performance. Other recommendations include having a high degree of involvement of IS executives in corporate planning, the use of outsourcing services to promote systems integration, and the importance of internal coordination mechanisms to facilitate both systems consistency and lower transaction costs. (JEL: Classification M21, 021, 032).

1. Introduction

Information technology (IT) has transformed business practices in the last several decades: operations, marketing strategies, distribution, and customer

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service have become increasingly dependent on IT. Moreover, IT has changed its orientation from that of *pure operational utility in* the 1960s and 1970s to that of a *competitive weapon* in the 1980s and today (27, 29, 49). These phenomena have affected the way modern organizations are managed, as well as the way information technology affects the various activities of an organization's value-chain.

Although the role of IT has been dramatically altered over this period, the way information systems (IS) researchers view and analyze IT's impacts on organizational life has not been significantly modified. Past studies have showed that the majority of IS research has followed contingency models that have resulted in conflicting and fragmented findings which do not adequately explain the role of IT as a determinant of organizational success (22, 67). Thus, a gap between *organizational reality* and *researched reality* has been created. To bridge this gap, this study has the objective of moving toward the development of an explanatory model that complements past IS research findings and adds a new perspective in viewing IT's impact on organizational dynamics.

This study is based on the premise that the methods most frequently used in the study of *IT's impact on organizational life* and of *IS management* encourage *analysis* without *synthesis.* In other words, they tend to focus on simple relationships among a few "important" variables in search of direct causations, while ignoring populations of variables that reveal more about how these variables *work together* under other than *ceteris paribus* conditions (49, 51, 67).

Organizational and IS researchers have viewed IT as directly affecting organizational performance or mediating the effect of contingency variables on performance. However, there is no clear understanding of how other major elements of organizations (e.g., strategy, people, and organizational structure) interweave with IT to impact overall economic performance.

Other major problems with the analytic approach have been that the contingency models (i) follow a reductionistic perspective in trying to capture organizational reality (i.e., they examine bivariate relationships under *ceteris paribus* conditions which results in understanding only "slices" of organizational reality); and (ii) even though the data are assessed statistically, the models are deterministic in that they follow predetermined paths of interactions among the variables and the way that they lead to organizational or IS success [33, 67]. Thus, results are often conflicting since the directionality of these paths depends on the assumptions made by each researcher.

The central thesis of this study is that the analytic-contingency approach is incomplete, and that it is therefore unlikely to be capable of "capturing" organizational reality regarding IT's impact on organizational economic performance (OEP). The complexities of how multiple factors intertwine to produce OEP can be understood best from the perspective of a holistic methodology [51, 67], which is here demonstrated in the context of the integration of organizational systems.

2. Contingency Versus Holistic Research Approaches

IS research has extensively followed the contingency paradigm from organizational theory. Ives et al. [22] categorized 331 IS doctoral dissertations and found that 30.8 percent of them to be contingency-type studies. Weill and Olson [67] reviewed all the empirical studies published in *MIS Quarterly* and *The Journal* of MIS between the years 1982-1988 and found an over 70 percentage to be of the contingency type. This dominance of IS research by the contingency approach may be one of the reasons why IS researchers have not been successful in establishing a central paradigm to explain IT's economic impact on organizations [22, 33, 67].

The contingency approach in IS research assumes that a few external and internal variables importantly affect the performance of IS, as well as the economic performance of the organization, through its affect on IS performance. In other words, it is assumed that there are different "paths of success" between contingency variables (e.g., investment in technology, IT sophistication), IS performance variables (e.g., user satisfaction, system quality), and organizational economic performance (OEP) variables (e.g., profitability, cost efficiency). Various researchers then, select different paths for study and derive conflicting results in terms of *what affects what, and how.*

For instance, some researchers have concentrated on possible direct OEP effects of IT investments. Kauffman and Weill [24] evaluated the various approaches that have been used to test the OEP effects of IT investments, and reported conflicting results in eleven empirical studies in service industries. They cautioned against the use of unidirectional approaches and recommended a new focus emphasizing theory building rather than theory testing. Similarly Attewell and Rule [3] reviewed the literature on the effects of computing on organizational attributes (e.g., centralization, differentiation, vertical and horizontal integration) and concluded that findings were fragmentary and conflicting.

Weill and Olson [67] identified four major criticisms of the contingency approach in IS:

1. *Use of a naive meta-theory.* This refers to four assumptions made by IS researchers: the rationality assumption, the functionalist paradigm and the objectivist approach, which assumes the existence of an objective and measurable reality, and the role of deterministic models.

2. *Conflicting empirical results from studies measuring similar constructs and reported low correlations.* This refers to "premature quantification strategies" employed by many researchers, before they sufficiently understand the variables and their underlying relationships.

3. *Development of ill-defined concepts of fit and performance.* This refers to naive unidimensional measures of performance and the use of perceptual measures of performance. Also, researchers have ignored any potential time lags which may exist between causes and effects.

4. *Narrow perspective.* This refers to the narrow paradigm of the contingency approach employed by IS researchers and identifies the need for exploration of new paradigms.

On the other hand, researchers that have adopted a *gestalt-holisticperspective* have treated the organization as a whole rather than as something that is decomposable into elements that can be tested independently [1, 13, 35, 36, 40, 41].

The expression *Gestalt(s)* is a derivative of Gestalt psychology, which views human experience as "integrated structures or patterns that have specific attributes which can neither be derived from the elements of the whole nor considered simply as the sum of those elements" *{Webster's New World Dictionary* [66]). This approach results in the identification of patterns (or configurations, or archetypes) of organizational attributes that can explain interactions among organizational elements and possibly reveal either functional or dysfunctional patterns of organizational communication [12, 13, 35, 36].

The central theme behind the adoption of such an approach is that through the study of a few important classes of observations (i.e., common characteristics of a group of firms) one can catalog diverse phenomena and understand what otherwise might be an accumulation of conflicting findings [35, 41].

Gestalts are closely associated with the concept of internal consistency.

Internal consistency is defined by Webster's New World Dictionary [66] as the "agreement or harmony of parts or features to one another or a whole".

Table 1 compares and contrasts the contingency (reductionist) perspective with those of a holistic approach emphasizing gestalts.

3. The Research Question

This study employs a holistic approach to support IS theory building by integrating the findings of past research related to the impact of IT on organizational effectiveness. It adopts the concept of gestalts from the organizational and strategic management literature as its key emphasis stands on the interdepen¬ dencies among organizational components [13, 20, 40, 61, 63]. The primary research question deals with **Internal Consistency and IT-based Integration Patterns:**

Do information-based organizations (IBOs)[1], *with higher levels of internal consistency among their IT-based components perform better than these with lower levels of internal consistency? (In other words, are different IBO gestalts associated with different levels of organizational economic performance?)*

In this study, internal consistency refers to the agreement between the processes and actions that affect the strategy, structure, and technology of an organization. Part of the reasoning behind the internal consistency concept is attributed to the fact that, even if information technologies may be similar across organizations within the same industry, the way that they are utilized within each firm and integrated with a firm's strategic objectives can be a source of advantage. **Thus, performance differences among organizations can be explained not just by the way these organizations react to the business environment, but also by the way they enact their own environments through internal coordination of activities and exploitation of IT integration.**

A number of organizational researchers have attested to such positive associations between internal consistency and organizational economic performance [13, 15, 26, 39, 40].

4. The Research Model

Figure 1 shows the research model that guides this study. It is based on three independent constructs shown at the upper left. These three varieties of

organizational systems integration[2] have been identified in previous research [31, 47, 56]. The outcome variable shown at the right side of Figure 1 also has 3 dimensions (efficiency, market-based performance, and IS managers' perceptions of the accomplishment of organizational goals).

The three dependent constructs: technological, functional, and strategic integration reflect the roles of information technology, structure, and strategy. Each variety of the organizational systems' integration has a *process* and an *output* sub-dimension which reflect the *planned* and the *actual* levels of each type of integration.

As Figure 1 shows, the research model utilizes the constructs of IT-based integration and internal consistency in order to define various *organizational gestalts*. These gestalts represent different constellations of distinct IT-based organizational attributes —characterizing their states, process and output— that are descriptive of clusters of organizations. Thus, each cluster of organizations exemplifies common patterns of the attributes (types of integration). As the model shows then, each organizational cluster is hypothesized to perform differently from other clusters. Figure 1 also shows control variables in the lower left. These control variables (organizational and IS size, IS budget and investment strategy) are included to further explain the economic performance variance.

The Gestalt-mediated relationships in Figure 1 are based on the notion that organizations can usefully be characterized by a few basic attributes and thus belong to a few basic configurations or gestalts of those attributes [19, 26, 35, 36, 38, 41, 44, 48, 49]. This is also related to the concept of internal consistency and its positive association with organizational success [10, 12, 13, 41, 49].

The model of Figure 1 can be used to identify and classify patterns of organizational characteristics that show (i) how IT components are integrated, (ii) how the participants in the organization use such IT integration, and (iii) how IT and corporate planners cooperate within an IBO, and then to predict the IBO's performance according to that classification.

5. Operationalizing the Constructs in the Research Model

The research model entails various constructs which must be operational¬ized for data collection purposes:

(a) Technological Integration (TI): *TI is the electronic integration among an organization's various IT components (i.e., data, systems, applications, tele-*

communications) that is required in order to form and use a common IT architecture [14, 62, 65]. Such integration is reflected in both the *IT process* (i.e., *how* the systems and applications are developed) and the *IT output (i.e., what* systems —procedural, as well as technological— and applications are provided internally and what integration *standards* are available) of the IS function: e.g., a relatively high level of integration would be associated with a software architecture that permits data to flow without intervention; a hardware architecture that permits linkages among different systems; the existence of communication standards and standardized communication products. The study used Ein-Dor and Segev's [14] measures of IS integration plus a number of items regarding *output* and *process* IT integration developed from interviews with IS professionals.

b) Functional Integration (FI): *FI is the IT-mediated coordination among a firm's members regarding the firm's value-chain activities* [50, 53]. Thus, FI refers to the *exploitation* of technological integration (TI) in order to *Coordinate* a firm's functions and integrate the various roles and responsibilities of its members [62]. Such coordination is exhibited in both the context of *organizational process* (i.e., *how* the firm's members or functions work together to accomplish the organizational goals and what coordination procedures they follow), and in the context of *organizational output* (i.e., *what* organizational services and products are offered due to such cooperation): e.g., the usage of procedures to ensure consistency among functions and tasks; the usage of centralized databases or software (such as groupware) that allow sharing information across functions. Based on executive interviews, as well as Slevin's [57] proposed ways to measure internal coordination and integration among organizational functions, a number of items regarding *output* and *process* functional integration were developed in this study (see Appendix).

(c) **Strategic Integration (SI):** *SI involves the integration of IT and corporate strategy activities and plans.* Thus, SI refers to the coordination among IS and corporate planners or the *alignment* of IS and corporate strategic planning activities [27, 56]. Such alignment is depicted by both the *planning process* (i.e., *how* the IS and business executives cooperate in planning activities) and the *planning output* (i.e., *what* types of plans result from their coordination): e.g., the participation of the IS planner in corporate strategy activities and respectively IS plans that recommend technologies and actions that support the corporate strategy's goals. Based on issues that distinguish IS and corporate strategic planning activities proposed by King [27], McLean and Soden [37], and Venkatraman [62], a number of items were generated to identify the *process* and *output* dimensions of strategic alignment for this study.

(d) **Organizational Economic Performance (OEP):** *OEP is defined in this study as an organization's ability to complete acceptable outcomes and actions in an efficient and effective way [11,* 25] . Hence, this definition refers to *operating performance* (i.e., it provides an indication of past and present levels of efficiency), and *goal accomplishment (i.e.,* a subjective measure of the degree of a firm's ability to complete its projected outcomes).

In addition to some subjective survey items developed for this study, objective data (i.e., secondary data from Sheshunoff's Information Services Database) was obtained to assess firm performance and demographic characteristics of the participants commercial banks.

Table 2a, and 2.b identify the various measures used in this study for the dependent and control variables of the research model. These operationaliza¬ tions were incorporated into the *Banking Systems Integration Profile (BSIP)* instrument developed for this research study.

6. Research Propositions

Based on past research, a number of propositions were formulated:

Proposition 1: *IBO Gestalts and Differential Organizational Economic Performance*

> Information-based organizations with consistent IT-based elements (i.e., their technology, structure, and strategy have a similar formation) will be more strongly associated with higher levels of organizational economic performance (OEP) than will organizations with less consistent elements.

This proposition has been advanced and supported by theoretical and empirical work conducted by researchers in the areas of *organizational communication* [23, 52]; *organizational design* [30, 57]; and *information systems* [8, 14, 27, 49, 56, 65].

Since each type of integration has two dimensions, *process* and *output,* Proposition 1 can be divided into two exploratory propositions depending on the *type of consistency* emphasized: **Type** I ("Process Integration"), and **Type II** ("Output Integration") consistency.

Proposition 1.1. *Type I Consistency: Process Integration*

Consistency among the levels of *Process* dimensions across all types of IT-based integration is positively associated with organizational economic performance: the higher this kind of consistency is, the higher the overall performance will be. In other words, IBOs with similar levels of technological, functional, and strategic process integrations are likely to perform better than the ones with dissimilar levels of integration.

Proposition 1.2. *Type II Consistency: Output Integration*

Consistency among the levels of *Output* dimensions across all types of IT-based integration is positively associated with organizational economic performance: the higher this kind of consistency is, the higher the overall performance will be. In other words, IBOs with similar levels of technological, functional, and strategic output integrations are likely to perform better than the ones with dissimilar levels of integration.

Propositions 1.1 and 1.2 focus on the concepts of gestalts and internal consistency emphasizing that high performers should be characterized by different gestalts than low performers. They also imply that there will be lower variability of performance within clusters of IBOs than across clusters of IBOs in terms of process and output integration.

7. Sample Selection and Methodology

This study is cross-sectional and was conducted in a field setting within an information-based industry: commercial banking within the United States. A single industry was selected in order to better control for the impact of exogenous variables on economic performance.

Sampling from a single industry was appropriate for two reasons:

(i) To control for the industry context, since various industries use different types of technologies and exhibit different patterns of organizational interde¬pendencies. It has been argued that the industry context strongly impacts the IT-organizational structure and the IT-performance relationships [4, 50], so that a cross-industry study might not provide reliable results.

(ii) To control for the impact of *information intensiveness* on the information processing capabilities of the firm. Commercial banks were selected due to their focus on integrative products (e.g., better overall service) and efficiency

factors (e.g., less costs) [5, 6, 49]. Commercial banks are defined as "financial institutions owned by stockholders that accept demand deposits, make commercial and private loans and may provide a variety of other financial services" [60, p. 7].

The commercial banking industry was deemed to be appropriate for this research due to its high *information intensity* [4, 50] and its focus on internal efficiency and service [49]. For instance, according to banking IS executive Steve Ruegnitz, "Because the technology is the very heart of the business, the effectiveness of IT is measured by the profitability of the business itself [9].

IT-based integration (technological, structural, and strategic) and internal consistency were appropriately considered as predictors of commercial banks' economic performance. This is because there has been a continuing restructuring of the banking industry (i.e., changes in consumer needs; focus on convenience, speed, and service; deregulation; accelerated rate of mergers and acquisitions), and a "new market" has been created consisting of thousands of branches of larger banks, savings and commercial banks, and non-financial companies [5, 49]. Thus, the race for advantage has shifted its locus of attention from investment policies to customer service and efficiency of operations through the internal systems of a bank [5, 6, 49].

8. Survey Procedures, Sample Characteristics and Preliminary Analyses

Two relevant SIC (standard industrial classification) codes were identified for this sample's construction (from *S & P's Register of Corporations):* 6021 (National Commercial Banks) and 6022 (State Commercial Banks). *Thomson's Bank Directory* [60] identifies 3,828 national commercial banks (headquarters only, no branches included) and 8,026 state commercial banks in the U.S. However, only 879 commercial banks fit the constraint of a single SIC code.

In order to test the propositions, a random sample of 325 commercial banks with a single SIC (i.e., either 6021 —National Commercial Banks or 6022— State Commercial Banks) was selected as the sample population for the survey. The banks were selected from Sheshunoff 's *Database* using a random number generator. The same database was used for objective measures of organizational economic performance (i.e., ROA, ROE, Growth in Revenues, Assets).

IS executives were identified as the informants for this study due to their

extensive knowledge of and involvement in the areas identified by this research's model: technical infrastructure, functional coordination, strategic alignment, and evaluation of organizational economic performance. A pretest phase was conducted including interviews and structured questionnaires) in a large metropolitan area in order to refine the instrument. The instrument was revised as a result of those interviews thereby resulting in the instrument used in the national study.

The 325 questionnaire packages were sent to the Chief Executive Officers (CEOs) of the banks since no commercial database with the names of banking IS Executives, was available. The study's "package" included a cover letter, the questionnaire, and a postage-paid, self-addressed return envelope. A short letter explained to the CEOs the goals of this research and they were then asked to forward the questionnaire to their IS executive. A "second wave" was sent producing a total of 99 responses (a 30.4% response rate). Of these, 92 cases were sufficiently complete to be included in the analysis.

The executive questionnaire included three parts. The first one had instructions and general information about the *Banking Systems Integration Profile* (BSIP) instrument. The second part included the scales for Technological, Functional, and Strategic Integration, and the third part included the scales for the performance variables, the control variables (bank size, diversification strategy, IS expenditures), and other demographic information. In addition, the surveys were coded for purposes of analysis (i.e., entering the data and comparing subjective vs. objective information).

Table 4.a provides a summary of the profiles of those respondents. Table 4.b shows the job titles of the informants and verifies that they survey reached the intended executive level.

Reliability checks tested the internal consistency of the scales, or the degree to which we can expect the scale items to measure the constructs over time. Cronbach's *alpha* was used as a measure of reliability with a cutoff point of 0.70 [46]. The scales, after their modification by the factor analyses, and their reliabilities are shown in Table 5.

Correlation analyses were also used to test construct validy. Tables 6, 7 and 8 present the correlations which confirm a high construct validity and strong relationships between the independent variables (integration scales), between the dependent variables (subjective and objective scales) and between the two.

9. Cluster Analysis Techniques and Discussion

Cluster analysis was employed to identify clusters based on Technological, Functional, and Strategic Integration. The clustering process used in SPSS-X statistical program [45] has four basic steps: computation of proximities between the initial clusters of organizations, combination of any two nearest clusters to form new clusters, re-computation of the proximities between existing clusters and the new clusters, and return to the second step until all cases (organiza¬ tioons) have been combined into one cluster. Thus, that process produces a hierarchy of clusters that can range from one overall cluster to as many clusters as there are cases [45].

Some of the benefits of cluster analytic techniques are [40, 48]: (a) Increased specificity in organizational research and identification of common features of organizations, (b) better prediction of organizational behavior, and (c) fewer conflicting findings among researchers regarding *what causes what* and *in what direction.*

However, it can be argued that cluster techniques involve a degree of arbi-trariness in cluster development. Thus, three major questions should be answered to ensure proper application [41]: (1) *Why only these variables?* which refers to choosing the appropriate dimensions to cluster and compare organizations, (2) *How can the statistical significance of groups be evaluated?* which refers to the stability of clusters for different samples, and (3) *What type of multivariate clustering technique should be used? which* refers to the appro-priateness of different grouping methods (i.e. clustering, Qmethod, etc). These questions are further discussed below.

A number of cluster analysis techniques that are described as "Q-techniques" are available. Ward's methodology, which has been suggested as the most accurate and reliable clustering technique by a number of researchers [43, 58], was adopted here.

In cluster analytic work, it is important to describe the subgroups (clusters) found in terms of the variables on which the clustering was based. This is done for the following reasons [41, 48]: (1) it allows us to discover what the organiza-tions in each cluster actually have in common; (2) it serves as an accuracy check of the clustering, since within group variances on most of the grouping variables should be small; and (3) it provides us with a basis for understanding the rela-tionships between the clusters and the "external" variables that characterize the organizations (i.e., the control and demographic variables for the banks).

This study's data (n= 99 cases with 92 valid) were clustered according to Ward's agglomerative hierarchical clustering procedure. This technique groups organizations on the basis of their profile similitaries and its goal is to identify homogeneous clusters of organizations where the groups are distinct from each other but very similar internally. For this study six dimensions were used to cluster the organizations into homogeneous groups: Technological Process Integration (TI-PROCESS), Technological Output Integration (TI-OUTPUT), Functional Process Integration (FI-PROCESS), Functional Output Integration (FI-OUTPUT) Strategic Process Integration (SI-PROCESS) and Strategic Output Integration (SI-OUTPUT).

To determine the number of meaningful clusters in this sample, a discriminant analysis was performed to identify the "probability of correct group classification" for different numbers of clusters. The optimal number of clusters (with a *percent of grouped cases correctly classified* of 96.75%) was the one with five clusters with 24, 17, 19, 16, and 16 cases in each cluster respectively. Table 9 summarizes each cluster's characteristics compared to the pool of respondents.

Overall, the five clusters appeared to be homogeneous (small variance within clusters) while there were many differences across the clusters. Tables 10.a and 10.b convert the ranges of values for each dimension to *Very Low, Low, Medium, High and Very High* values. The values for Table 10.b were derived as follows: The minimum value was subtracted from the maximum and the result was divided by five; then that number was added to the minimum to produce the "very low" range, added to the "very low" to produce the "low" scale, and, finally, added to the "high" to produce the "very high" range.

10. Testing the Research Propositions: Consistency Measurement and Equifinality Patterns

Organizational researchers have measured consistency by calculating various forms of "distances" among the variables [13, 41, 58]. Here, consistency is measured as the sum of absolute values of the differences across each integration type, similar to the consistency measures suggested by Sneath and Sokal [58] and Miller and Friesen [41). A modified version of Sneath and Sokal's [58] measure of differences was adopted, the *Manhattan Distance* or *City-Block* measure [45]. This consistency measure is calculated as *the sum of absolute differences between the qualitative scores of integrations* and it is shown by relation (1):

$$D = \Sigma \mid X_{ij} - X_{ik} \mid \qquad (1)$$

[where i = clusters 1, 2, 3, 4 and 5 and j, k = values for TI, FI, and SI].

The results from Table l0.a and l0.b, where each integration score was compared and categorized in ranges of "very low", "low", "medium", "high", and "very high", were first used to rank the clusters. Then, the differences between each type of integration were measured and added together to represent overall consistency.

11. Interpretation of Findings: *Successful vs. Unsuccessful* Gestalts

Based on objective economic performance measures, cluster 3 is clearly the best performer of all five groups of banks, with clusters 1 and 4 following, and clusters 2 and 5 being the worst performers. There are a few interesting findings of the study related to the performance characteristics: (a) smaller banks (in terms of both numbers of employees and total assets) appear to be performing much better when they have relatively low-to-medium levels of integration but are fairly consistent across all types of integration, and (b) larger banks with higher levels of technical integration and with similar consistency patterns across and within integrations are not performing as well as their smaller competitors.

The findings indicate that banks with consistent levels of strategic alignment process and output may perform much better than other similar banks when they have a high degree of realized technological integration (TI-output) and IT-based functional coordination (Fl-output) in place. This is confirmed by Broadbent and Weill [8] in their analysis of the impact of IS alignment on the performance of Australian banks. Their conclusion that "an effective [IS] strategy-formation process requires... that the basic infrastructure for future (IS] developments is in place when needed ... this then results in a relatively stable technological framework" (p. 176) also indicates the need for co-existence between SI and TI integration levels. King [28] also refers to the importance of achieving internal consistency of strategic planning by defining consistent **means** (IT infrastructure, and policies) and **ends** (strategic goals).

Furthermore, these findings imply that (a) outsourcing could affect performance positively as long as the implementation of IT integration is consistent with the needs for IT-based functional coordination, (b) banks with inconsistent strategic alignment levels and low levels of TI and FI output integration will perform poorly compared to the rest of the banks, (c) small banks with high levels of TI and SI are good performers and (d) large banks with low-medium levels of TI and SI are, in general, poor performers.

The **successful gestalts** had the following general characteristics: (a) they were consistent in both the process and output dimensions of all varieties of integrations; (b) they preferred to outsource their technological integration; (c) they were very consistent in their strategic alignment between business and IS strategy; (d) they spent more out of their total operating budget for IS; (e) they were small-medium sized banks; and (f) they were consistent in the way they used IT to achieve functional coordination.

The **unsuccessful gestalts** had the following attributes: (a) they were either very large banks (cluster 2) or very small banks (cluster 5); (b) they were relatively consistent in terms of both their functional and strategic integrations; (c) they had either very high strategic integration (cluster 2) or very low strategic integration (cluster 5); and (d) their budget for IS spending to the total operating budget was among the lowest in the sample.

Thus, the findings of this research on the IT-based Gestalts in the banking industry indicate the existence of successful and unsuccessful patterns of integration, that is, that certain combinations of technological, functional, and strategic integration might lead to better or worse performance. Furthermore, the fact that strategic integration and technological integration were found to be the most important elements of success indicates the importance of consistency between the technological and strategic infrastructures.

The finding that organization size might be associated with some of the structural and effectiveness characteristics suggests that this research is just the beginning of understanding what is really important in explaining performance differences among similar organizations, as well as the beginning for the expansion of current theory development in IS. However, this study's exploratory propositions were not fully supported and the *equifinality patterns {i.e.,* patterns of success or patterns of failure) that were discovered in this research were not as clear as they were expected to be.

12. Conclusion: Which information management practices were most effective?

Though limited to a single industry, this research has provided some evidence about organizational practices that facilitate technological integration, functional coordination, and business and information strategy alignment. Overall, increased performance was evident when the following *effective IS management practices were* in place:

1. *Successful implementation of strategic plans.* Banks that had their IS plans well-integrated with their business plans and were consistent in focusing both in process and implementation issues did overall better than the rest of the banks.

2. Communication of strategic directions of the bank. Banks with IS executives who were well informed about the business plans and involved in both IS and corporate strategy performed better than the rest of the banks.

3. *Successful outsourcing.* Banks that maintained a relatively low degree of technical integration process and let third parties (outsourcers) integrate their systems did better than those banks which developed in-house integration procedures.

4. *Small size flexibility and internal coordination.* Smaller banks with the ability to utilize information technology resources according to their needs for functional coordination did better than the banks which spent more resources on process than required by their internal business functions.

Overall, the results of this study have shown the following attributes of Information Systems Gestalts:

- *Explanatory Power of Gestalts:* This research has identified Configurations of IT integration attributes that can help academicians and managers under¬ stant more about their impact on the overall economic performance of firms.

- *Predictive Power o Gestalts:* Organizations with some characteristics that "match" a particular gestalt from those identified in this research, can be analyzed under the propositions and properties developed for those gestalts.

- *Normative Power of Gestalts:* By distinguishing between "less effective" and "more effective" groups of firms. IS practitioners will be able to suggest possible "movement" of management from a less to a more consistent configuration.

- *Gestalts as Auditing and Planning Devices:* The IT-based profiles identified can be used for strategic planning activities toward competitive advantage, either by comparisons (benchmarking) of a firm with its "best-in-class" competitors, or by ensuring the proper alignment of IT elements of a firm (auditing of IT coordination and integration).

TABLE 1

A Comparison between the Contingency (Reductionistic) and the Gestalt (Holistic) Approaches in Organizational and IS Research

Characteristics	THE CONTINGENCY PERSPECTIVE (REDUCTIONISTIC)	THE GESTALT PERSPECTIVE (HOLISTIC)
Dominant Approach	Match or Fit between few organizational attributes (e.g., structure, strategy), and the impact on organizational performance	A broader conceptualization of *consistency* or *coalignment* between several organizational attributes and their combined effect on firm performance
Strengths	Ability to isolate precisely specified theoretical links and their impact on firm success. Systematic replication could lead to cumulative knowledge	Ability to view the *whole* and identify interrelated processes and attributes. Systemic (holistic) view leads to both understanding and prediction
Limitations	Specification errors due to *ceteris paribus* conditions. Inability to isolate conflicting contingencies. Could be atheoretical due to is "every situation is different" orientation	Complex nature of internal consistency makes it difficult to hypothesize about its impact. Difficulty in deciding the type of variables to describe the whole and in generalizing as well
Analytical Methodologies	Multiple regression analysis with interaction terms; ANOVAs; Path analysis	Cluster analysis (Q-type, R-type, hierarchical); pattern analysis (profile deviation)
Representative References	Lawrence & Lorsch [30]; Galbraith [16]; Bender [7]; Harris & Katz [23]; Vitale et al. [64].	McKelvey [35]; Miller & Friesen [41]; Miles & Snow [39]; Venkatraman & Prescott [63]; Sabherwal and King [54].

TABLE 2.a

Operationalizations for Organizational Economic Performance (OEP) Measures

	Objective Measures	Subjective Measures
Operating Performance	■ 2-year Average ROA (adapted from Keats & Hitt, [25]) ■ 2-year Average ROE (adapted from Keats & Hitt, [25])	■ Global measure of goal achievement (suggested by Lawrence & Lorsch, [30]; Dess & Robinson, [11]). -- *general profitability* -- *cost efficiency* -- *growth in revenues*
Market-Based Performance	■ 2-year Average Growth in Revenues (adapted from Keats & Hitt, [25]) ■ 2-year Average Assets ■ 2-year Average Net Income	■ Global measure of market share ■ Global measure of customer service

TABLE 2.b

Operationalizations for Control Variables

Organizational Size	Bank Investment Policy	Information Systems Expenditures
■ McDaniel & Kolari's [34] classification: *small, medium,* and *large* organizations.	■ Salter & Weinhold's [55] types of *related supplementary* and *related complementary* organizations	■ Harris & Katz's [21] *IT Expense Ratio* ■ Li & Roger's [32] *MIS Expenditures* measures (hardware, software,telecom, database)

TABLE 3

Commercial Banks Identified and Respondents' Characteristics

[Sample Characteristics from *Standard and Poor's Register of Corporations: Directory,* 1992]

	Number of Banks Identified in Thomson's Dir.	Surveys Sent in our study	Number of Banks That Responded
National Commercial (SIC: 6021)	508 **(57.8%)**	**179**	63 **(35.19%)**
State Commercial (SIC:6022)	371 **(42.2%)**	**146**	36 **(24.65%)**
Total:	879	**325**	99 **(30.46%)**

TABLE 4a

Descriptive Statistics from the Study's Survey Respondents

Variables	N	Mean	Std.Dev.	Range
Instrument Scales & Variables:				
Technological Integration:				
TI_PROC -- **Process (8 items)**	97	2.63	.98	1.0 - 4.6
TI_PROD -- **Output (7 items)**	98	3.42	.90	1.0 - 5.0
Functional Integration:				
FI_PROC -- **Process (5 items)**	96	3.29	.89	1.0 - 5.0
FI_PROD -- **Output (9 items)**	98	3.05	.83	1.0 - 5.0
Strategic Integration:				
SI_PROC -- **Process (5 items)**	99	3.26	.86	1.0 - 5.0
SI_PROD -- **Output (7 items)**	97	3.15	.89	1.0 - 4.7
Subjective Economic Performance				
(Goal Achievement)	97	3.98	.96	1.00 - 5.00
Profitability Goals -- **OEP1**	98	3.79	.84	1.00 - 5.00
Cost Efficiency Goals -- **OEP2**	94	3.48	.85	2.00 - 5.00
Market Share Goals -- **OEP3**	94	3.60	.85	2.00 - 5.00
Customer Service Goals -- **OEP4**	95	3.82	.96	1.00 - 5.00
Revenue Growth Goals -- **OEP5**	98	3.73	.66	1.80 - 5.00
PERFORM **(All 5 items above)**				
Control Variables				
	67	215.52	599.70	0 - 4,000
Full-Time IS Personnel (Headquarters)	43	9.28%	5.87	1.7 - 32.0
MIS Budget/Total Operating Budget	31	25.63%	18.28	0.0 - 60.0
Hardware/Total MIS Budget	31	22.04%	15.44	0.0 - 54.0
Applications/Total MIS Budget	25	9.30%	7.88	.5 - 33.0
Telecom/Total MIS Budget	23	3.80%	4.30	0.0 - 16.0
Database/Total MIS Budget				
Objective-Secondary Data:				
	99	1325	2280	30 - 15,700
Total Number of Bank Employees	99	.47%	1.43	(-6.44) - 1.82
2-year Average Return on Assets (ROA)	99	6.47%	19.63	(-88.12) - 24.66
2-year Average Return on Equity (ROE)	99	4.28%	11.78	(-36.49) - 51.76
2-year Average Growth in Revenues	99	4,629,520	13,385,278	20,634-99,141,150
2-year Average Total Assets (000s)	99	32,334	119,190	(-52,322) - 816,500
2-year Average Net Income (000s)				

TABLE 4b

Job Titles from the Study's Survey Respondents

Job Titles for Respondents (58 out of 99)	Number of Respondents
Chairman and CEO	7
Vice President, IT & Product Support	3
Vice President, IS Systems Development or Technical Planning	4
Vice President of MIS (or Senior VP of MIS)	17
Director of MIS	8
General Manager of Information Resources	2
Systems Analyst or Data Processing Liaison	3
Senior Vice President of Financial Services or Loan Information Officer	4
Vice President of Operations	10
Total:	**58**

TABLE 5

Reliabilities for Subjective Integration Scales

INTEGRATION SCALES (TOTAL N=99)	RELIABILITIES (CRONBACH'S ALPHA)
Technological Integration	
Process Integration (n=97)	**0.90**
Output Integration (n=98)	**0.85**
IT-Based Functional Integration	
Process Integration (n=96)	**0.84**
Output Integration (n=98)	**0.91**
Strategic Integration	
Process Integration (n=99)	**0.88**
Output Integration (n=97)	**0.93**

TABLE 6

Correlation Coefficients among All Integration Scales[3]

	TI_PROC	TI_PROD	FI_PROC	FI_PROD	SI_PROC	SI_PROD
TI_PROC	1.0000					
TI_PROD	.5250**	1.0000				
FI_PROC	.5223**	.5100**	1.0000			
FI_PROD	.5641**	.4413**	.4648**	1.0000		
SI_PROC	.4546**	.6081**	.5344**	.5445**	1.0000	
SI_PROD	.5510**	.5771**	.5966**	.4966**	.6377**	1.0000

TABLE 7

Correlation Coefficients among Economic Performance Scales

	PERFORM	OEP1	OEP2	OEP3	OEP4	OEP5	ROA
PERFORM	1.0000						
OEP1	.7547**	1.0000					
OEP2	.7742**	.5253**	1.0000				
OEP3	.7029**	.3322**	.5363**	1.0000			
OEP4	.7074**	.2610**	.4601**	.4630**	1.0000		
OEP5	.7845**	.0556	.2008	.3386**	.5035**	1.0000	
ROA	.2921**	.4172**	.2573**	.1947	.0296	.2224*	1.0000
ROE	.4104**	.5362**	.3664**	.2813**	.0808	. 2518*	.8064**

TABLE 8

Correlation Coefficients among Integration and Economic Performance
[* - Signif. ρ < .05 ** - Signif. ρ < .01 (2-tailed)]

	ROA	ROE	PERFORM
TI_PROC	.0125	.0969	.1887
TI_PROD	.1592	.2546*	.3436**
FI_PROC	-.0303	.0954	.3160**
FI_PROD	-.0058	.0782	.4169**
SI_PROC	.0836	.1756	.4196**
SI_PROD	.608	.1566	.3275**

TABLE 9

Ward's Cluster Analysis for Commercial Banks in the US

	Entire Sample (n = 92) Mean	Cluster 1 (n = 24) Mean	Cluster 2 (n = 17) Mean	Cluster 3 (n= 19) Mean	Cluster 4 (n = 16) Mean	Cluster 5 (n = 16) Mean
Integration Attributes						
Technological Integration						
TI_PROCESS	**2.67**	3.26	2.50	1.94	3.96	1.57
TI_OUTPUT	**3.37**	3.45	3.96	3.51	4.01	1.81
Functional Integration						
FI_PROCESS	**3.29**	3.06	3.85	2.85	4.42	2.42
FI_OUTPUT	**3.09**	3.36	3.35	2.61	3.70	2.36
Strategic Integration						
SI_PROCESS	**3.24**	3.41	4.05	2.95	3.72	1.97
SI_OUTPUT	**3.13**	3.43	3.75	2.73	3.88	1.76
Subjective Economic Performance						
Profitability	**3.92**	3.90	3.93	4.36	4.07	3.21
Cost Efficiency	**3.81**	3.77	4.00	3.94	4.14	3.14
Market Share	**3.50**	3.68	3.73	3.5	3.57	2.85
Customer Service	**3.65**	3.40	4.00	3.63	4.28	3.07
Growth in Revenues	**3.81**	3.59	4.26	3.94	4.28	3.00
Global Performance (All)	**3.74**	3.66	3.99	3.88	4.06	3.05
Objective Economic Performance						
Return on Assets (ROA)	**0.42%**	0.71	-0.07	1.00	0.52	-0.26
Return on Equity (ROE)	**5.91%**	10.49	1.55	12.83	11.51	-10.17
Growth in Revenues	**4.31%**	4.11	2.98	8.49	0.61	4.73
Size Attributes						
Full-Time Bank Employers	**3,299**	7,219	5,739	936	2,542	107
Full-Time IS Personnel	**232**	712	313	35	136	12
Total Assets (000,000s)	**£4,953**	8,120	2,870	2,460	3,620	6,690
IS Spending /Budget Ratios						
IS to Total Oper'g Bgt.	**9.12%**	8.60	5.54	10.13	13.66	8.00
HW to Total IS Budget	**23.71%**	21.20	32.80	21.46	26.00	2.00
Application to Total IS	**23.92%**	32.80	21.46	26.00	2.00	
Telecom to Total IS Bgt.	**8.80%**	6.10	15.60	8.38	5.00	3.00
Database to Total IS Bgt.	**3.97%**	7.10	3.70	2.06	5.00	2.00
Cluster "Names"		*Semi--efffective Integrators*	*Ineffective Outsourcers*	*Effective Integrators*	*Ideal Integrators*	*Small Anti-Integrators*

TABLE 10

Numerical Scale Ranges for Clusters Found in study

SUBJECTIVE & OBJECTIVE SCALES	MEAN	MIN	MAX	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
Technological Integration								
Process Integration	2.67	1.57	3.96	1.57-2.04	2.05-2.52	2.53-3.00	3.01-3.48	3.49-3.96
Output Integration	3.37	1.81	4.01	1.81-2.25	2.26-2.69	2.70-3.13	3.14-3.57	3.58-4.01
IT-Based Func.Integration								
Process Integration	3.29	2.42	4.42	2.42-2.82	2.83-3.22	3.23-3.62	3.63-4.02	4.03-4.42
Output Integration	3.09	2.36	3.70	2.36-2.62	2.63-2.89	2.90-3.16	3.17-3.43	3.44-3.70
Strategic Integration								
Process Integration	3.24	1.97	4.05	1.97-2.38	2.39-2.80	2.81-3.21	3.22-3.63	3.64-4.05
Output Integration	3.13	1.76	3.88	1.76-2.18	2.19-2.60	2.61-3.03	3.04-3.45	3.46-3.88

TABLE 10b

"Very Low-Low-Medium-High-Very High" Scale Ranges

	Cluster 1 (n = 24) Mean	Cluster 2 (n = 17) Mean	Cluster 3 (n = 19) Mean	Cluster 4 (n = 16) Mean	Cluster 5 (b = 16) Mean
Integration Attributes					
Technological Integration					
TI_PROCESS	High	Low	Very Low	Very High	Very Low
TI_OUTPUT	High	Very High	High	Very High	Very Low
Functional Integration					
FI_PROCESS	Low	High	Low	Very High	Very Low
FI_OUTPUT	High	High	Very Low	Very High	Very Low
Strategic Integration					
SI_PROCESS	High	Very High	Medium	Very High	Very Low
SI_OUTPUT	High	Very High	Medium	Very High	Very Low
Economic Performance Attributes					
Global Subj. Perform.	3.66	3.99	3.88	4.06	3.05
Return on Assets (ROA)	0.71%	-0.07	1.00	0.52	-0.26
Return on Equity (ROE)	10.49%	1.55	12.83	11.51	-10.17
Size Attributes					
Assets (000,000,000s)	8.12	2.87	2.46	3.62	6.69
All Bank Employees	7,219	5,739	936	2,542	107
Full-time IS Personnel	712	313	35	136	12
Cluster "Names"	Semi effective Integrators	Ineffective Outsourcers	Effective Integrators	Ideal Integrators	Small Anti-Integrators

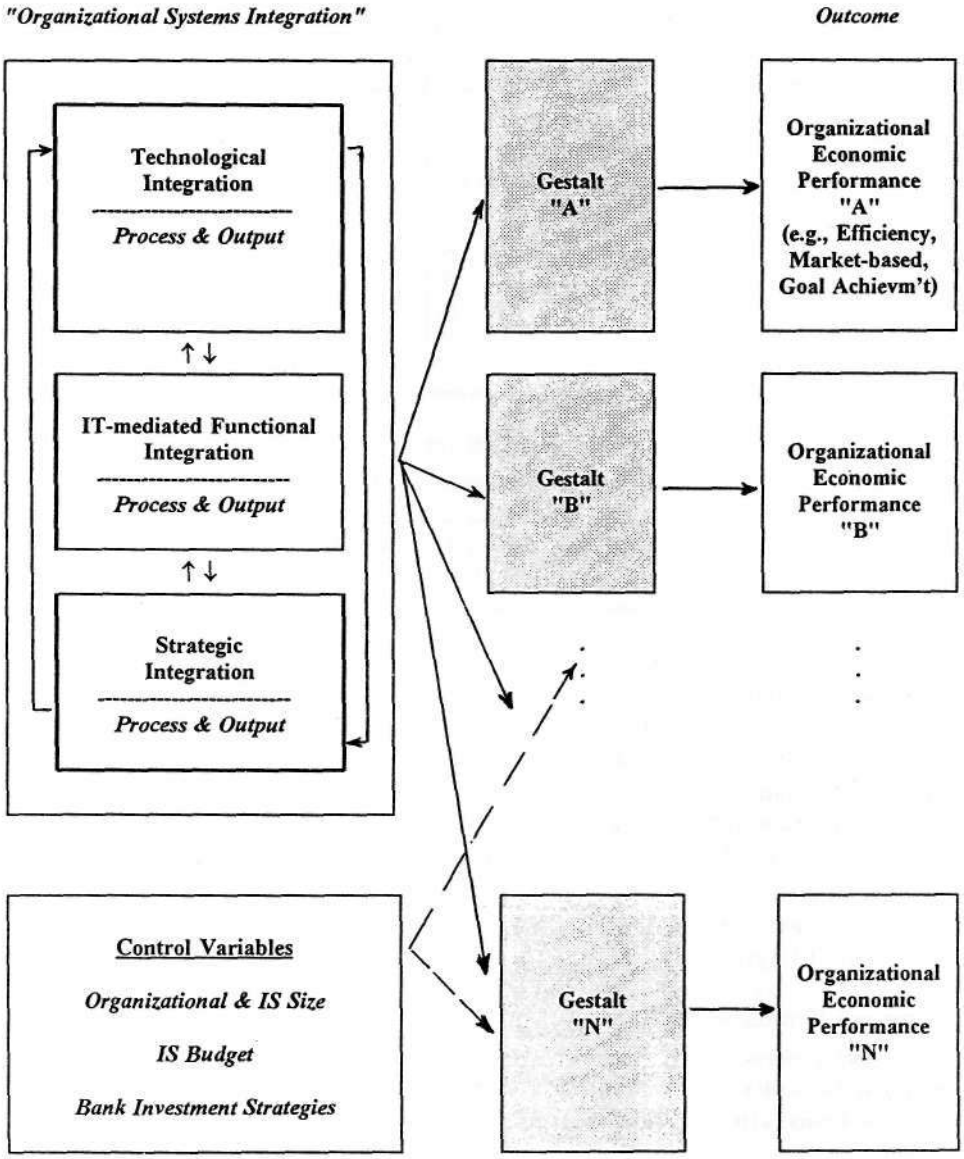

Figure 1: The Holistic Research Model (Gestalt Approach) for IBOs.

Footnotes

1. Information-based organizations (IBOs) or Information-intensive organizations (cf., Porter and Millar [50]; Zmud et al. [70]) are those whose products or services are information-based and whose internal operations are highly dependent on their information processing management capabilities. Examples of IBOs are banks, insurance companies, and airlines.

2. *Organizational Systems Integration (OSI)* is defined here as the overall IT-based and IT-mediated information exchange within and across an organization's subsystems.

3. TI, FI, SI represent Technological, Functional and Strategic Integration respectively. PROC and PROD represent the Process and **Product** dimension of the Integrations.

PERFORM = Overall Subjective Measure of Economic Performance

ROA = Objective Measure of Return on Assets

ROE = Objective Measure of Return on Equity

OEP1, OEP2, OEP3, OEP4, OEP5 are the five components of subjective organizational economic performance.

References

[1] *Ackoff, R.* (1971), "Towards a system of systems concepts", Management Science, Vol. 17(11).

[2] *Andrews, K.* (1971), 'The Concept of Corporate Strategy", Dow-Jones Irwin.

[3] *Attewell P. and Rule, J.,* Computing and organizations: what we know and what we don't know", Communications of the ACM, Vol. 27(12), 1984.

[4] *Bakos, Y.* (1987), "Dependent variables for the study of firm and industry-level impacts of IT", ICIS - International Conference in Information Systems.

[5] Banking World, (1988)," Survey of integrated systems for retail banking", September.

[6] Banking World, (1990), "The drive to offer electronic services", February.

[7] *Bender, D. H.,* (1986), "Financial impact of information processing", Journal of MIS, Vol. 3(2).

[8] *Broadbent, M. and Weill, P.* (1993), "Improving business and information strategy alignment: learning from the banking industry", IBM Systems Journal, Vol. 32, No 1.

[9] CIO Magazine, (1992), Supplement: "IT in Business: Finding the Payoff, January.

[10] *Child, J.* (1974), "Managerial and organizational factors associated with company performance - Part I", Journal of Management Studies, October.

[11] *Dess, G. and Robinson, R.,* (1984), "Measuring organizational performance in the absence of objective measures", Strategic Management Journal, Vol. 5.

[12] *Doty, D. H., Glick, W., and Huber, G.,* (1993), "Fit, Equifinality and Organizational Effectiveness: A Test of Two Configurational Theories", Academy of Management Journal, Vol. 36, No 6, December.

[13] *Drazin, R. and Van de Ven, A.* (1985), "Alternative forms of fit in Contingency theory", Administrative Science Quarterly, Vol. 30.

[14] *Ein-Dor, P. and Segev, E.* (1982), "Organizational context and MIS structure: some empirical evidence", MIS Quarterly, Vol. 6 (3).

[15] *Etzioni, A.* (1961), A Comparative Analysis of Complex Organizations, Free Press.

[16] *Galbraith, J.* (1973), Designing Complex Organizations, Addison - Wesley.

[17] *Goodhue, D., Kirsch, L., Quillard, J., and Wybo, M.* (1992), "Strategic Data Planning: Lessons from the field", MIS Quarterly, Vol. 16 (1), March.

[18] *Grant, J. H. and King, W. R.* (1982), "The Logic of Strategic Planning", Little Brown Piblish¬ing.

[19] *Greenwood, R. and Hinings, C. R.* (1993), "Understanding Strategic Change: The Contribution of Archetypes", Academy of Management Journal (AMJ), Vol. 36, No 5, October.

[20] *Hambrick, D.* (1983), "High profit strategies in mature capital goods industries", A M J, V. 26 (4).

[21] *Harris, S. E. and Katz, J. L.* (1991), "Organizational Performance and information technology investment intensity in the insurance industry", Organization Science, Vol. 2 (3), August.

[22] *Ives, B., Hamilton, F., and Davis, G.* (1980), "A framework for research in computer-based information systems", Management Science, Vol. 26, No. 9.

[23] *Katz, D. and Kahn, R.* (1966), "The Social Psychology of Organizations", John Wiley.

[24] *Kauffman, R. and Weill, P.* (1989), "An evaluating framework for research on the performance effects of information technology investment", Proceedings of the 10th ICIS.

[25] *Keats, B. and Hitt, M.* (1988), "A causal model of linkages among environmental dimensions, macroorganizational characteristics, and performance", Academy of Management Journal, Vol. 31 (3).

[26] *Khandwalla, P.* (1973), "Viable and effective organizational designs of firms", Academy of Mgt Journal, Vol. 16.

[27] *King. W. R.* (1978), "Strategic Planning for Management Information Systems", MIS Quartern, V. 2 (1).

[28] *King W. R.* (1983), "Evaluating Strategic Planning Systems", Strategic Management Journal, Vol. 4(3).

[29 *King, W. R.* (1988), "Strategic Planning for Information resources: The evolution of concepts and Practice", Information Resources Management Journal, Fall.

[30] *Lawrence, P. and Lorsch, J.* (1967), "Organization and Environment", Harvard Business School Press.

[31] *Leavitt, H. J.* (1965), "Applied Organizational Change in Industry: Structural, Technological, and Humanistic Approaches", in J. March's (ed) Handbook of Organizations, Rand McNally.

[32] *Li, E. and Rogers, J.* (1991), "An information systems profile of US companies", Information and Management, Vol. 21.

[33] *Lyytinen, K.* (1987), "Different perspectives on Information systems: Problems and solutions", Computing Surveys, V. 19(1).

[34] Mc*Daniel, S. and Kolaru, J.* (1987), "Marketing implications of the Miles and Snow typology", Journal of Marketing, V (51).

[35] *McKelvey, W.* (1975), "Guidelines for empirical classification of organizations", Adm. Science Quarterly, Vol. 20.

[36] *McKelvey, W.* (1982), "Organization Systematics: Taxonomy, Evolution and Classification", University of California Press, Berkeley, California.

[37] *McLean, E. and Soden, J.* (1977), "Strategic Planning for MIS", John Wiley and Sons.

[38] *Meyer, A., Tsui, A., and Hinings, C. R.* (1993), "Guest Co-Editors' Introduction: Configura¬ tional Approaches to Organizational Analysis", Academy of Management Journal, Vol. 36, No 6.

[39] *Miles, R. and Snow, C.* (1978), "Organizational Strategy, Structure, and Process", McGraw-H-ill.

[40] *Miller, D.* (1981), "Toward a new contingency approach: The search for organizational gestal¬ ts", Journal of Management Studies, V. 18 (1).

[41] *Miller, D. and FGriezen, P.* (1984), "Organizations: A Quantum View", Prentice-Hall.

[42] *Miller, J. and Doyle, B.* (1987)," Measuring the effectiveness of computer-based information systems in the financial services sector", MIS Quarterly, Vol. 11, March.

[43] *Milligan, G. and Cooper, M.* (1986), "A review of clustering methodologies", Working paper series, WPS 86-118, The Ohio State University, Columbus, Ohio.

[44] *Mintzberg, H.* (1979), 'The Structure of Organizations, Prentice-Hall.

[45] *Norusis, Marija,* (1988), "SPSS-X Introductory Statistics Guide", SPSS Inc., The Netherlands.

[46] *Nunnally, J.* (1978), "Psychometric Theory", McGraw-Hill.

[47] *Peters, T. and Waterman, R.* (1982), "In Search of Excellence", Harper and Row Publishing.

[48] *Pinto, P. and Pinder, C.* (1972), "A cluster analytic approach to the study of organizations", Organizational Behavior and Human Performance, Vol. 8.

[49] *Pollalis, Yannis, A.* (1993), "Understanding the Impact of IT-based Coordination on the Performance of Information-Intensive Firms: A Gestalt Approach in the Banking Industry", Ph. D. Thesis, University of Pittsburgh, The J. M. Katz Graduate School of Business, UMI 950-7391.

[50] *Porter, M. and Millar, V.* (1985), "How information gives you competitive advantage", Harv-ard Business Review, July.

[51] *Preston, A. M.* (1991). "The Problem In and Of MIS", Accounting, MGT. and Infor-mation Technologies, V. 1 (1).

[52] *Roberts, K. H. and O'Reilly, C.* (1974), "Failures in Upward Communication in Organizations: Three Possible Culprits", Academy of Management Journal, Vol. 17 (2).

[53] *Rockart, J. and Short, J.* (1989), "IT in the 1990s: Managing Organizational Interdependence", Sloan Mgt. Review, V. 3.

[54] *Sabherwal, R. and King W. R.* (1991), "Towards a theory of strategic use of information resources: An inductive approach", Information and Management, V. 20.

[55] *Salter, M. and Weinhold, W.* (1980), "Diversification by Acquisition", Free Press, 1980.

[56] *Scott-Morton, M.* (1991). "The Corporation of the 1990s: Information Technology and Organizational Transformation", Oxford University Press.

[57] *Slevin, D. P.* (1989), "The Whole Manager", American Management Association.

[58] *Sbeath, P. and Sokal, R.* (1973), "Numerial Taxonomy: Principles of Numerical Classification", Freeman Inc.

[59] *Thompson, J.* (1967), "Organizations in Action", McGraw-Hill.

[60] *Thomson Bank Directory, (1992). (formerly The Rand McNally Bankers Directory),* Thomson Publications.

[61] *Venkatraman, N.* (1989), "The concept of fit in strategy research: toward verbal and statistical correspondence", Academy of Management Review, Vol. 14(3).

[62] *Venkatraman, N.* (1991), "IT-induced Business Reconfiguration", The Corporation of the 1990s, Ch. 5.

[63] *Venkatraman, N. and Prescott, J.* (1990), "Environment-strategy co-alignment: an empirical test of its performance implications", Strategic Management Journal, Vol. 11.

[64] *Vitale, M., Ives, B., and Beath, C.* (1986), "Identifying strategic information systems: finding a process of building an organization", Proceedings of the 7th ICIS.

[65] *Wardle, C.* (1984), 'The evolution of IS Architecture", Proceedings of ICIS.

[66] *Webster's*(1979), New World Dictionary, William Collins Publishers.

[67] *Weill, P. and Olson, M.* (1989), "An assessment of the Contingency theory of MIS", JMIS, Vol. 6 (1).