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WHY HAVEN'T WE MASTERED ALIGNMENT? THE IMPORTANCE OF THE INFORMAL ORGANIZATION STRUCTURE[1]

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Executive Summary

A long-running challenge in both large and small enterprises has been aligning the information systems (IS) function/department with the enterprise as a whole. This study examines the techniques that eight organizations have used to both monitor and improve the alignment and performance of their IS functions. We found that aligning IS and business strategies did, indeed, improve IS performance. However, the eight cases call into question the value of the business and IS aligning their formal organization structures; this type of alignment did not always improve IS performance. On the other hand, we found that informal organization structures played a far more important role than expected in improving IS performance.[2]

The Importance of IS Alignment

The challenges of aligning the IS function with the rest of the business have been highlighted in a number of surveys identifying key issues facing IS[3] executives in the 21st century.[4] And although numerous articles and books have been written on the subject, firms continue to demonstrate limited alignment.

Consider the following two scenarios:

> The CEO of an insurance company wonders why a key competitor seems so much more innovative and responsive to customer needs. "How do they manage to initiate, customize, and support such a variety of insurance products so quickly?" she asks. "We could not cope with the complex information processing that must be required! What are they doing differently with their people and technology? Our systems personnel are always bogged down with last year's priorities…"
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> A CIO wonders when he will be accepted at top management meetings. Although he has won a long, hard battle to be present at these meetings, to understand new business direc-

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[3] In this article, the terms information systems (IS) and information technology (IT) are used interchangeably.

[4] Regardless of whether IS services are provided internally (in a centralized, decentralized, or federal manner) or are outsourced, we assume the boundaries of the IS function can be identified. Thus, the fit between the unit(s) providing IS services and the rest of the organization can be examined.

> tions better, he senses that his presence is merely tolerated. His ideas have little clout. His colleagues acknowledge that IT is becoming increasingly important to business operations, but their thinking and behavior stifle innovation …

The issue in both these scenarios is poor business-IS alignment. Poor alignment manifests itself in numerous ways. When business executives[5] cannot clearly articulate their IS needs or when IS personnel have limited business vision or knowledge, IS investments are likely to be costly and yield low returns. High-potential IS applications may not be identified, and executives with first-rate technology-related ideas find it difficult to turn ideas into action.

In organizations that manifest such characteristics, business executives create "work arounds," such as developing departmental "pockets" of IS personnel disguised as "business analysts." Likewise, talented IS personnel move to firms that challenge and appreciate them more. The IS job gets done, but with unnecessary redundancy and inefficiency. Costs and delays are greater than necessary, and performance suffers. These situations demonstrate misalignment – the opposite of the strategic partnerships and business-to-IS integration organizations say they want.

Due to poor alignment, although organizations invest heavily in IS to compete more effectively, they continue to experience sub-optimal performance. Disappointment in performance is further exacerbated by higher IS spending, which creates even higher expectations for success.

To uncover ways to improve alignment, we suggest the following questions: What key components of IS alignment clearly impact IS performance? What aspects of IS alignment are less well understood? What managerial practices improve the probability of alignment?

We address these questions by revisiting the concept of IS alignment and exploring the nature and relevance of two components of alignment – *strategic alignment* and *structural alignment* – and their relative importance to improving IS performance. *Strategic alignment* focuses on the fit between the priorities and activities of the IS function and those of the business unit. *Structural alignment* examines the degree of structural fit between IS and the business, specifically in the areas of IS decision-making rights, reporting relationships, (de)centralization of IS services and infrastructure, and the deployment of IS personnel.

The Elusiveness of IS Alignment

The IS literature repeatedly outlines the fundamental importance of alignment for organizational effectiveness. Furthermore, studies have demonstrated that IS alignment and performance are correlated.[6] Definitions of alignment range from high-level, broadly encompassing definitions such as "the fit between an organization and its strategy, structure, processes, technology and environment"[7] to more focused definitions such as "convergent intentions, shared understanding, and coordinated procedures."[8] Two well-received views are that IS alignment is "the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans,"[9] and that IS alignment involves "fit" and "integration" among business strategy, IT strategy, business infrastructure, and IT infrastructure.[10]

The literature suggests that for IS alignment to occur, managers must "mesh things right from the start" and "intertwine technology and business processes."[11] These are potentially daunting tasks. Further complicating matters, alignment is not a state, but a journey – one that is not always predictable, rational, or tightly planned.[12] Firms are bound to be frustrated if they

[5] We refer to end users as business partners or business executives.

[6] For example, see Chan, Y. E., Huff, S., Barclay, D.W., and Copeland, D.G. "Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment," *Information Systems Research* (8:2), June 1997, pp. 125-150; Crouteau, A-M., and Bergeron, F. "An Information Technology Trilogy: Business Strategy, Technological Deployment and Organizational Performance," *Journal of Strategic Information Systems* (10), 2001, pp. 77-99.

[7] Kanellis, P., Lycett, M., and Paul, R.J. "Evaluating Business Information Systems Fit: From Concept to Practical Application," *European Journal of Information* Systems (8), 1999, p. 66.

[8] Shams, R., and Wheeler, F. "Information-Induced Strategic Alignment: Towards A Semiological Analysis," *Managing Information Technology in a Global Economy*, 2001, p. 1097.

[9] Reich, B., and Benbasat, I. "Factors That Influence the Social Dimension of Alignment Between Business and Information Technology Objectives," *MIS Quarterly* (24:1), March 2000, p. 82.

[10] Henderson, J.C., and Venkatraman, N. "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal* (32:1), 1993, pp. 4-16; Luftman, J., and Brier, T. "Achieving and Sustaining Business-IT Alignment," *California Management Review* (42:1), Fall 1999, pp. 109-122; Papp, R. "Introduction to Strategic Alignment," in R. Papp (ed.), *Strategic Information Technology: Opportunities for Competitive Advantage*, Idea Group, Hershey, PA, 2001, pp. 1-24.

[11] Keen, P.G.W. "Information Technology and the Management Difference: A Fusion Map," *IBM Systems Journal* (32:1), 1993, pp. 17-39.

[12] Ciborra, C. "From Thinking to Tinkering: The Grassroots of Strategic Information Systems, " in the *Proceedings of the Twelfth International Conference on Information Systems*, New York (December 1991), pp. 283-291.

seek static, "once and for all" alignment. Managers are better off anticipating periods of equilibrium requiring minor adjustments and fine-tuning, disrupted occasionally by periods of significant change and fundamental readjustment. Envisioning alignment as a fluid process, involving continuous realignments, helps prepare managers for the complexities of their daily operations. Lewin's three-stage model[13] suggests that companies must constantly be "unfreezing" (actively *unlearning* previous approaches), "changing" (learning new strategies to promote alignment), and "refreezing" these new approaches.

Clearly, alignment is not a straightforward management activity; it may involve management improvisation and opportunism. A challenge to those seeking alignment is that the alignment responsibility appears increasingly complex and elusive as our understanding of alignment matures. The target is higher than first envisioned – "embedding" versus "folding around" IT[14]. The target is moving – dynamic versus static alignment incorporating more than just the readily available structures. And the path is often "muddled" or convoluted – alignment emerges; it cannot be forced. In general, managers try to design organizational elements; however, there are limits to what a top-down, engineered approach can achieve.

The complex nature of alignment mirrors the generally increasing complexity of organizations. In fact, IT alignment is best described not as a uni-dimensional phenomenon but as a superset of multiple, simultaneous component alignments that bring together an organization's structure, strategy, and culture at multiple (IT, business unit, and corporate) levels, with all their inherent demands. This complexity is compounded by the fact that 21st century organizational structures are changing. Organizations are arguably more "human," not merely systems of rigid and artificial regulations and responses. They emphasize principles of interdependence, flexibility, and partnership. And decision-making and business processes are being overhauled to fit better with "networked" organizations that defy old hierarchical models.[15]

The term "boundaryless organization" points to diminishing organizational structures. However, it is only the previously recognized, readily altered, formal structures that are fading into the background. Informal structures – the ones that emerge rather than are mandated – are gaining greater importance. It is hard to argue with the idea that "a significant number of the rules that determine organizational behavior are not written. Rather, they are a combination of explicit and implicit values, beliefs, and assumptions."[16]

Relationships among business partners and IS executives are paramount. New capabilities and competencies are developing to enhance these relationships. However, they often focus primarily on formal structures, with few corresponding changes to supporting areas, such as shared values, evolving roles, and new technologies. The result is poor alignment. "You must also see to it that all the elements of company ideology, strategy, structure, process, rewards, and people are in alignment."[17]

Exploring Preconditions for Alignment

Due to the complex and daunting nature of overall business-IS alignment, perhaps successful alignment is more likely by emphasizing the management of specific components of alignment, rather than aiming for the seemingly unreachable target of multifaceted, overall alignment. This is not to diminish the importance of maintaining a holistic view of alignment. It merely suggests that focusing on how individual components contribute to alignment may be more feasible, and yield better results, than tackling all the alignment challenges of the entire IS organization at once.

To this end, we conducted a study of eight firms to examine the *strategic* and *structural* components that are more conducive to managerial control and manipulation than other components of alignment. In addition, we explored preconditions, which lead to (or promote) these components.

Strategic alignment means the fit between the priorities and activities of the IS function and the business unit. The goal in strategic alignment is for IS priori-

[13] Mintzberg, H., and Quinn, J.B. *The Strategy Process*. 3rd ed. Prentice Hall, New Jersey, 1996, p. 620.

[14] Sauer, C., and Yetton, P. "The Dynamics of Fit and the Fit of Dynamics: Aligning IT in a Dynamic Organization," in the *Proceedings of the Fifteenth International Conference on Information Systems*, Vancouver, BC (December 1994), pp. 41-50.

[15] Hammer, M. "The Soul of the New Organization," in F. Hesselbein, M. Goldsmith, and R. Beckhard (eds), *The Organization of the Future*, Jossey-Bass, San Francisco, 1997, pp. 25-31; Somerville, I., and Mroz, J.E. "New Competencies for a New World," in *The Organization of the Future*, op. cit., pp. 65-78; Ulrich, D. "Organization Around Capabilities," in *The Organization of the Future*, op. cit., pp. 189-196.

[16] Nadler, D., Gerstein, M., Shaw, R., and Associates. "Transforming the Informal Organization," in D. Nadler, M. Gerstein, et al. (eds), *Organizational Architecture: Designs for Changing Organizations*, Jossey-Bass, San Francisco, 1992, p. 133.

[17] Gadiesh, O., and Olivet, S. "Designing for Implementability," in *The Organization of the Future*, op. cit., pp. 53-64.

ties, capabilities, decisions, and actions to support those of the entire business.

Research on *strategic alignment* [18] suggests that aligning business unit and IS strategies involves (1) communication and understanding between line and IS executives; (2) linked business and IS missions, priorities, and strategies; (3) interconnected business and IS planning processes, and resulting plans; and (4) line executive commitment to IS issues and initiatives. These are the preconditions of strategic alignment we explored in this study.

Structural alignment means the degree of "structural fit" between IS and the business. Structural fit relates to organizational structure and includes such areas as the location of IS decision-making rights, reporting relationships, (de)centralization of IS services and infrastructure, and deployment of IS personnel. The goal of structural fit is for these IS and business structures to support organizational objectives, and not work at counter purposes to them.

Research on IS organization structure and *structural alignment* [19] highlights the importance of appropriate (1) IS skills on the part of line personnel and business skills for IS personnel; (2) (de)centralized reporting relationships and committees; (3) informal networks and relationships (impacting both structural and strategic alignment); (4) career paths and cross-functional linkages; (5) incentives and rewards; and (6) performance measurement and evaluation. These are the preconditions of structural alignment we explored in this study.

A key goal of our study was to determine whether these preconditions for strategic and structural alignment were consistently present at different points in time when the firms experienced high IS alignment. Over the course of a year, we had several interactions with each business unit. We reported our findings back to the companies by addressing such questions as:

- What factors leading up to IS alignment were present most consistently? Is there divergence between theory (what researchers have been preaching) and practice (what successful managers have been doing)?
- To what extent are IS strategic alignment and IS structural alignment important to your firm? Are IS strategic alignment and IS structural alignment equally important to overall IS alignment?
- Can we identify other dimensions of overall IS alignment – besides strategic and structural alignment – that appear to be important and lend themselves to managerial intervention?

The organizations were then given opportunities to agree or disagree with our observations.

Eight Firms in the Study

To carry out the research, we identified firms that (1) were considered to be well-aligned based on objective measures, (2) showed high levels of IS performance, and (3) demonstrated high levels of business performance as measured by traditional indicators (financial statements) and other contemporary indicators, such as company reputation. We used a research database of approximately 170 North American IS business units created in a previous IS alignment study[20] that contained a number of business and IS alignment and performance indicators. All 170 IS organizations had been evaluated by their business partners (that is, end users) in terms of IS strategic alignment, IS performance, and business performance.

[18] Enns, H.G., and Murray, E.J. "Shared Understanding Between IS and Business Executives: Impacts on IS Effectiveness and Business Performance," in the *Proceedings of the Administrative Sciences Association of Canada Conference*, St. John's, NF, 1997; Reich, B., and Benbasat, I. "Measuring the Linkage Between Business and Information Technology Objectives," *MIS Quarterly* (20:1), March 1996, pp. 55-81; Broadbent, M., and Weill, P. "Developing Business and Information Strategy Alignment: A Study in the Banking Industry," in the *Proceedings of the Twelfth International Conference on Information Systems,* New York, NY (December 1991), pp. 293-306; Lederer, A.L., and Mendelow, A.L. "Information Resource Planning: Overcoming Difficulties in Identifying Top Management's Objectives," *MIS Quarterly*, September 1987, pp. 389-399.

[19] Armstrong, C.P., and Sambamurthy, V. "Creating Business Value Through Information Technology: The Effects of Chief Information Officer and Top Management Team Characteristics," in the *Proceedings of the Seventeenth International Conference on Information Systems,* Cleveland, OH (December 1996), pp. 195-208; Sambamurthy, V., and Zmud, R.W. "A Conceptual and Measurement Approach for Examining IT Management Architectures," in the *Proceedings of the Annual Conference of the Administrative Sciences Association of Canada, IS Division* (14:4), Lake Louise, AB, May-June 1993, pp. 194-204; Rockart, J.F., and Short, J.E. "The Networked Organization and the Management of Interdependence," in M.S. Morton (ed.), *The Corporation of the 1990s: Information Technology and Organizational Transformation*, Oxford University Press, New York, 1991, pp. 189-219.

[20] Chan, Y.E., et al. op. cit., 1997.

Table 1: Descriptions of the Eight Case Studies

Company	Description	Noteworthy Practices Associated with IS Alignment and Performance
C1: A large international insurance company (head office)	Company One is 150 years old and enjoys a Triple A rating with $6 billion in annual revenues. It has more than 3,200 employees, of whom 350 are IS employees.	• The Vice President and Director, IS reports to the President. He and other senior IS personnel have been with C1 for many years and are highly respected. • IS personnel attend business unit planning sessions and sit on line committees. Very good communication exists between line and IS personnel both in formal and informal settings. • Systems development is user driven. Systems "owners" tend to be senior line personnel. Delivery of IS projects focuses on business value added. • Within several business units, one individual is seen as the "IS liaison person"; this person represents the interests of the business unit and often plays a lead role in IS projects. • Information sessions and technology demonstrations promote the discussion of potential business applications of technology.
C2: A medium-sized manufacturing organization	Company Two is 15 years old and enjoys revenues of about $200 million. It has more than 1,400 employees, of whom 11 are IS staff. The annual IS budget is $2 million.	• The IS department head (Vice President, Systems, Technology and Reliability) reports to the President. This individual, who wears both line and IS hats, is very involved in company planning processes and strategy formulation, meeting regularly with other members of the senior management team. He and the President have worked together for many years and have a strong working relationship. • IS personnel regularly interact with line personnel in workshops and line committees. IS personnel are widely recognized as "partners" rather than mere service providers. As a result, IS planning is an important part of the business planning process. This fits with the company's goal of trying to be a leader in the use of advanced technology, including information systems. Systems personnel are loyal to the company and take pride in their accomplishments. • Regular reviews of major new systems are conducted.
C3: A small insurance organization	Company Three is a 30-year-old organization with $40+ million in annual revenues. It has fewer than 50 employees, of whom three are IS employees. The IS budget is $0.5+ million.	• The company's president, who was once VP of IS in another organization, is a strong proponent of IS. The IS head is also in charge of Research and Development. • IS personnel are liked and highly regarded within the company. They are very aware of key business initiatives, are very customer-oriented, and have strong business skills. There are very good line-IS interactions and relationships. • The team concept (e.g., quality teams) is used heavily throughout the organization. Hierarchy is limited and employees, including IS employees, are given considerable responsibility. IS reporting arrangements, like the systems themselves, are flexible and adaptive. The company culture is one of personnel "empowerment." • The company uses information systems to increase the speed at which it reacts to marketplace opportunities. Strategic systems are continually improved so that other companies are forced to play "catch up." IS has a strong performance record.

Following screening, we selected eight "top performing" business units (see the Appendix and Table 1 for further details). Five were located in Canada, three in the U.S. Three of the Canadian firms were insurance companies and two were manufacturers of pharmaceutical products. All three U.S. firms manufactured automotive parts. All eight business units represented multinational corporations, and all eight firms agreed to participate in the study.

We interviewed key informants (the CEO, CIO, CFO, and generally two or more business partners)

Table 1 (cont.): Descriptions of the Eight Case Studies

Company	Description	Noteworthy Practices Associated with IS Alignment and Performance
C4: A large insurance organization (head office)	Company Four has a Triple A rating and $3.5 billion in revenues. It has 300 IS employees and an IS budget of $50+ million (1.5% of company revenues).	• The IS department head reports to the President and is a member of the senior management team. This executive has been with the company for several years and is well liked and respected. Strong working relationships exist between the IS department head and other division heads. • IS is structured around systems processes, with a focus on reengineering or improving each process. There are designated IS "process managers" and IS account managers – senior IS staff who build business relationships with a business area. Very good formal and informal communication exists between line and IS personnel. IS reporting arrangements are flexible and IS personnel are viewed variously as consultants, professionals, and partners. • An innovative program of note at Company Four is the "day with a rep," which allows IS staff to better understand the business by making customer calls with a sales representative. • IS projects have business sponsors. IS steering committees assist with the prioritization of systems-related projects. Systems projects are frequently audited or reviewed some time after they have been completed. Business partners are surveyed periodically to monitor the level of IS customer service. IS has a track record of successful project delivery.
C5: A medium-sized manufacturing organization (head office)	Company Five is 11 years old and has just under $100 million in annual revenues. It has received several awards for best manufacturing practices. It has more than 700 employees, of whom about 10 are IS employees. The IS budget is about $2 million.	• The corporate IS head attends a weekly staff meeting that is held to review the company's financial performance. Information systems are recognized as being very important to business success. • IS policy and practices tend to be informal and based on trust. Typical comments were, "If X says he'll deliver, I know he'll deliver." IS personnel perceive themselves as acting "like business people rather than employees." • Business partners often become quite involved with systems development. They share the responsibility for the project's failure or success. In fact, end users are so familiar with the information systems that very few "official" IS personnel are needed to enter or modify data and systems. In a way, all end users have become "IS" personnel. • The company is growing quickly and is continually being renewed. The following quote summarizes the climate: "We move young, aggressive people into positions that would typically be filled by 40 and 50 year olds; 40 and 50 year olds move to leadership positions in our new companies; in this way we are continually revitalizing the organization."

separately (sometimes repeatedly) in each firm. (See the Appendix for more details.) All respondents were guaranteed anonymity, and interview guides were provided before each interview to allow the interviewees to bring the information they needed to the meetings. The one- to two-hour interviews were taped to facilitate transcription, and interview transcripts were returned to the interviewees for their comments, to ensure that their responses had been recorded correctly. Following these steps, all the participating executives received a summary of the researchers' observations and conclusions regarding the company and its managerial practices. In addition, each company received a copy of the study's final research report, and participants were invited to comment on the research findings. This case study process (interviewing, reporting, incorporating feedback, reporting anew) lasted about a year.

The eight organizations are briefly described in Table 1.

Table 1 (cont.): Descriptions of the Eight Case Studies

Company	Description	Noteworthy Practices Associated with IS Alignment and Performance
C6: A medium-sized manufacturing organization	Company Six has revenues of $300 million. It has 600 employees, of whom 30 are IS employees. The central IS budget is $6 million.	• C6 seeks to be a leader in its industry in the use of IS to achieve competitive advantage. The importance of IS is clearly recognized by senior company executives. As one executive stated, "IS is so fundamental to how we run the business today. All you need is to have the system go down, and nobody can work." A committee of Vice Presidents, called the IS Leadership Group, provides feedback and direction from user communities regarding system priorities. • The IS department has a very thorough annual planning process which involves interviews with, and presentations to, members of the Operating Committee and other company executives. There is IS representation on the Operating Committee (which consists primarily of executives who report directly to the President). • The structure of the IS group is flexible and changes periodically to respond to business needs. For example, "end user computing" and "technical support" were recently combined under "infrastructure" within the IS department. • Some IS personnel understand the business processes as well as line personnel. Historically, IS people have spent multiple years supporting the same areas of the business. An "application utilization group" in the IS area focuses on issues such as training employees to use information systems. Business partners can be very involved in systems initiatives and frequently take responsibility for the success of newly developed applications. The President relies on his computer and sets a personal example of the importance of systems and technology.
C7: A medium-sized manufacturing organization	Company Seven is 120 years old and has $170 million in revenues. It has 2,000 employees, of whom about 30 are IS employees. The IS budget is $4 million.	• At C7, IS facilitates rapid response to frequent changes in customer requirements. • There is high awareness of the need to empower personnel. "We truly believe in responsibility, authority and accountability." In pursuit of this goal, IS employees are kept informed about business issues via regular meetings, newsletters, etc. Once a year, every employee (including those in the IS department) has an interview with either the President or one of his "direct reports." • C7 uses cross-functional teams, which include IS personnel, e.g., a "critical issues action team." There are IS steering committees in several functional areas. Generally IS projects have a line sponsor. The IS group is structured functionally, so there is a high degree of functional alignment. • The Vice President, IS and Logistics reports directly to the President. In general, there is very good communication between line and IS personnel. Often IS representatives will attend industry or customer presentations and meetings along with line representatives. The company environment is perceived as being a great one in which to work.

The eight business units are compared with each other in Table 2, with regard to alignment preconditions that we derived from the literature. (See the Appendix for the approach we took.) The companies are numbered C1-C8, in the order in which they were studied. Companies are listed as either consistently employing (Y=yes) or not employing (the company entry is left blank) these practices. Because company observations and interactions occurred over one year, practices were considered to be non-transient (that is, not specific only to a single business event or point in time). Although the degree of alignment changed in these firms daily, the preconditions for alignment described below were more stable.

Table 1 (cont.): Descriptions of the Eight Case Studies

Company	Description	Noteworthy Practices Associated with IS Alignment and Performance
C8: A medium-sized manufacturing organization (head office)	Company Eight is 80 years old and has $200 million in revenues. It has 600 employees, of whom 30 are IS employees. The IS budget is $3 million.	• C8 has identified 10 core strategies, one of which is the strategic use of information technology. The future of the organization depends on using IS capabilities to streamline business processes in order to become even more cost competitive. • The head of the IS group reports to the President. However, because of his recent arrival, he has not yet assumed his predecessor's place on the senior management team. • Line-IS interactions are generally warm, positive, and frequent. "There is a tremendous amount of communication between our IS group and various business groups," one manager reported. • An IS steering committee exists and IS is represented on most line management committees. • IS projects often have one or more line champions. Business partners frequently take responsibility for the success of IS projects.

Our Findings

Strategic alignment theory and practice are in sync. With strategic alignment, most business units fostered the alignment in ways we had expected. There was little conventional academic wisdom to challenge, except for the need to document IS strategy and plans, and to have IS personnel participate actively in the development of new products and services. In short, the literature and practice generally seemed to be in sync.

Structural alignment varied by organization; there was no one right way. With structural alignment, though, there was more to dispute, especially with respect to the preconditions. IS organizations did not always manifest strong business skills and a customer orientation, and CIOs were not always powerful members of senior management teams. IS steering committees were not always necessary, and partnerships with external IS consultants/service providers were not always utilized.

We therefore concluded that structural alignment could possibly be achieved in more ways than past research had uncovered. And different organizations might successfully achieve structural alignment in different ways. At any given point in time, we found no "one right way" to promote structural alignment. In fact, viewing alignment from such a rigid standpoint was potentially detrimental. As noted earlier, "if alignment is interpreted [solely] as tight coupling of systems, the resulting 'stiffness' in complex interacting organizational systems will increase the likelihood of failure."[21] Organizations are, after all, as unique as the individuals they employ; they cannot be forced into standard, straightforward molds.

IS strategic alignment mattered more than formal IS structural alignment. Also, because some preconditions for strategic and structural alignment consistently existed in *all* eight companies, while others existed only in *several* of them, we considered that this might indicate possible differences in importance. Some alignment factors might be preferable but not essential, while others might be both preferable *and* essential.

Using these criteria, we found that preconditions for alignment of organizational strategy were generally essential, while those for alignment of the formal organization structure were generally merely preferable. Does this indicate that, for consistent overall IS alignment, the strategic alignment factors are critical, compared to those of formal structural alignment? Taking this one step further, could one go as far as to suggest that IS strategic alignment is more important to overall IS alignment than IS structural alignment? Even more thought provoking, is it possible that managerial practice in certain organizations transcends our traditional understanding of alignment and performance? Some organizations seem to have the "juggling act" mastered, putting just the right emphasis on strategy, structure, culture, staff, and skills.[22]

[21] Shams, R., and Wheeler, F., op. cit., 2001, pp. 1096.
[22] Burns, J. "IS Innovation and Organizational Alignment – A Professional Juggling Act," *Journal of Information Technology* (11), 1996, pp. 3-12.

Table 2: Alignment Preconditions in the Best Performing Companies

	C1	C2	C3	C4	C5	C6	C7	C8	RELATIVE IMPORTANCE[23]
PRECONDITIONS OF IS STRATEGIC ALIGNMENT									
Communication and Understanding Between Business and IS Executives									
CIO has been with the firm for many years	Y	Y	Y	Y	Y	Y	Y		High
CEO and CIO have a strong working relationship	Y	Y	Y	Y	Y	Y	Y	Y	Critical
Linked Business and IS Missions, Priorities, Strategies, Planning Processes, and Plans									
Business and IS plans are closely linked	Y	Y	Y	Y	Y	Y	Y	Y	Critical
IS strategy and plans are well-documented	Y	Y		Y		Y	Y	Y	High
IS personnel participate in business planning	Y	Y	Y	Y	Y	Y	Y	Y	Critical
IS personnel participate in new product/service development	Y	Y	Y	Y			Y		Moderate
Line Executive Commitment to IS Issues and Initiatives									
IS projects have business sponsors	Y	Y	Y	Y	Y	Y	Y	Y	Critical
PRECONDITIONS OF IS STRUCTURAL ALIGNMENT									
IS Skills for Line Personnel, and Business Skills for IS Personnel									
IS training/skills development opportunities regularly exist	Y	Y	Y	Y		Y	Y	Y	High
IS personnel are customer-oriented and have strong business skills	Y		Y	Y	Y	Y		Y	High
Formal Reporting Relationships and Committees/Teams									
CIO reports to the CEO	Y	Y		Y			Y	Y	Moderate
CIO is a member of a senior management committee	Y	Y		Y	Y	Y	Y		High
CIO has both line and IS responsibilities		Y	Y				Y		Low
Formal IS reporting arrangements are altered to meet business partners' needs	Y		Y	Y		Y		Y	Moderate
There is an IS steering committee			Y	Y		Y	Y	Y	Moderate
Cross-functional teams/task forces are established	Y	Y	Y	Y	Y	Y	Y		High
Informal Networks and Relationships (see *Communication and Understanding Between Business and IS Executives* above)									
Appropriate Career Paths									
Personnel have opportunities to move vertically within the IS organization	Y	Y		Y	Y	Y	Y	Y	High
IS personnel make lateral short- or long-term transfers into business partner areas	Y	Y	Y	Y	Y	Y	Y	Y	Critical
IS staff are long term employees; there is little turnover	Y		Y	Y	Y	Y	Y	Y	High
Incentives/Rewards and Performance Measurement									
Quality or continuous improvement programs exist	Y	Y	Y	Y	Y	Y	Y		High
Incentive/compensation bonus schemes exist	Y	Y	Y	Y	Y	Y	Y	Y	Critical
The use of external IS consultants and/or outsourcing is encouraged when internal performance is weak	Y		Y	Y		Y	Y	Y	High
Regular reviews of IS performance are conducted	Y	Y		Y	Y	Y	Y	Y	High

We could not answer these questions definitively in this one study, but we began to entertain the idea that emphasizing alignment of formal business unit and IS structures might be misplaced. To investigate this further, we asked the interviewees to discuss explicitly the relative importance of IS strategic alignment and IS structural alignment in their firms. With almost no exceptions,[24] interviewees expressed the view that IS strategic alignment mattered more than IS structural alignment. The ends, not the means, were most important.

Flexibility of IS structures was important. In fact, in several of the organizations (C1, C3, C4, C6 and C8), executives considered it important to support flexible or changing (not fixed) IS structures. Various business partner and department needs dictated IS reporting and working arrangements. Multiple IS structures (i.e., tasks and responsibilities) were used across different functional areas and over time. As the IS department head at Company Three stated:

> *"Basically, ... we are customer [business partner] focused ... the [IS] structure is a situational thing."*

Other evidence of flexible structures included multiple co-existent career paths. All eight organizations allowed lateral movement, that is, moving IS personnel out into the business. Seven of the eight also had vertical promotion from within IS; one was too small to allow much vertical movement within the department. Other personnel participated in creative "opportunities" within IS. Still other personnel were permitted to "stagnate" (i.e., safely refuse promotions) if they wished. In addition, both centralized and decentralized companies and IS functions were seen to be "best performing." So we found a great deal of variety in the formal structural arrangements.

Structure is a means to an end. What, then, were we to conclude? As the CIO at Company Four thoughtfully commented:

> *"Structure is not what you should be focusing on but what you have to do; it's [simply] how you're going to deliver that business unit's objectives. You adapt the structure to fit the unit. If you spoke to five of our business unit leaders, you would think there were five different [IS] structures."*

This CIO went on to add:

> *"My thinking about [structure] has evolved over time. I started with some rigid, preconceived notions of how it would work and it proved me wrong!"*

We concluded therefore that either (1) IS structural alignment can be achieved more readily and/or in a greater variety of ways than IS strategic alignment, and/or (2) IS structural alignment is less important to overall IS alignment and performance than IS strategic alignment. Regardless, we thought it more important for senior managers to devote limited time and resources to monitoring and promoting strategic alignment than to focus on altering formal structural alignments.

This conclusion is not to belittle the importance of the formal organization structure, but merely to say that the expected returns on senior management's investment in IS alignment are likely to be greater if they place more emphasis on strategic alignment than on structural alignment. Certain factors and processes consistently appeared critical for strong IS strategic alignment. With IS structural alignment, these patterns were less clearly evident. We found evidence of an "informal structure" that is parallel to the formal structure that promotes alignment while taking into account elements that do not necessarily fall under the umbrella of "formal structure."

The informal organizational structure is more important to IS alignment than commonly recognized. Throughout the study, interviewees consistently described the *informal* organization structure as important for IS alignment. In several firms, we were also struck by the emphasis on competent, empowered, and proactive employees. The strong evidence of formal and informal teamwork, positive ongoing interactions, strong working relationships, and a vibrant culture demanded that we expand our list of components that contribute to overall alignment.

We realized some of the findings did not fit under strategy or formal organization structure. They are better captured under "social composition," "virtual structure," or "informal organizational structure." Thus, we have adopted the term "informal structure"[25]

[23] Critical=evident in every firm, High=evident in 6 or 7 firms, Moderate=evident in 4 or 5 firms, Low=evident in fewer than half of the firms studied (i.e., 3 or fewer).

[24] A small number of interviewees declined to comment.

[25] The researchers wish to avoid confusion of social composition with "social capital" (see the use of the term in Nahapiet, J. and Ghoshal, S. "Social Capital, Intellectual Capital, and the Organizational Advantage," *Academy of Management Review* (23:2), 1998, pp. 242-266). Also, the use of "virtual" as a primary descriptor may invite confusion with "virtual communities," which are defined elsewhere

to describe a third, perhaps hidden, component of alignment. It is comprised of various informal structures, that is, "relationship-based structures that transcend the formal division of labor and coordination of tasks."[26]

The informal structure cannot be separated entirely from the formal organization structure because it brings together an organization's socio-technical systems (including work, technology, people, processes, structures and information).[27] In general, it comprises the various informal structures, connections, and procedures that people use to get their work done, such as social networks, communities of practice, cross-department relationships, unofficial agreed-on processes, flexible division of work, and such.

The informal structure can dramatically influence an organization's performance, and can also be strategically utilized. Although the informal structure is in part intangible, managers can influence its development. It has been stated that "we 'engineer and build' the formal organization; we 'plant and cultivate' the informal organization."[28] The shift from an artificial to an organic metaphor emphasizes the message that the two structures may differ significantly, but they can both be methodically and thoughtfully defined and shaped. Interviewees consistently downplayed the value of the formal structure, but repeatedly described as critical relationships that transcended this structure. These relationships enhanced both formal structural and strategic alignment.

For instance, the CIO in Company Two suggested that high alignment existed because:

> *"We [the CEO and I] have been friends for 23 years or so and have strong respect for one another." (Emphasis added.)*

A business partner at Company Four stressed,

> *"I have complete trust and faith in [the CIO's] ability and her organization. I think it goes both ways. We respect each other's expertise." (Emphasis added.)*

Vice presidents at Company Four emphasized that open, impromptu communication encouraged the kinds of relationships that foster alignment:

> *"[I ensure alignment through] ongoing communication. [The CIO] and I meet once every couple of months. The two of us will sit and chat. This is not like the quarterly meetings where we chat about how things are progressing. We discuss how we feel about the issues and concerns. If we are developing something, or something is going a little off plan, I will give [the CIO] a call ... So it is proximity and communication. It is just an awareness that they are your partners." (Emphasis added.)*

In the companies we studied, even when the senior IS person did not formally report to the president, he or she had clout and credibility. Also, strong IS-line relationships throughout the ranks mirrored the strong relationships that CIOs had with their company presidents. For example, all the "direct reports" to the CIO in Company One had worked with the firm for more than 20 years and were highly regarded.

The CIO at Company Four stated:

> *"There is an incredibly strong commitment to having a well-skilled workforce ... My IS managers wear two hats. [First,] they are developers of people. They also have professional ["IS"] work that they do ... We have a really first-class IS organization ... We do not get much turnover ... We do not do our own thing but we do not take orders ... We are valued as part of the ... team." (Emphasis added.)*

The CIO at Company One also stated:

> *"I have good business unit leaders who have credibility and the freedom to act; the ... situation is positive and helps improve relationships and our ability to deliver." (Emphasis added.)*

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as communities utilizing electronic communication methods, whether they are physically based (such as a company using e-mail or electronic bulletin boards) or geographically dispersed (such as listservs) (see Blanchard, A., and Horan, T. "Virtual Communities and Social Capital," in *Social Dimensions of Information Technology: Issues for the New Millennium*, G. D. Garson (ed.), Idea Group Publishing, Hershey, PA, 2000, pp. 6-21).

[26] Nadler, D., and Gerstein, M. "Designing High-Performance Work Systems: Organizing People, Work, Technology, and Information," in D. Nadler, M. Gerstein, et al. (eds.), *Organizational Architecture: Designs for Changing Organizations,* Jossey-Bass, San Francisco, CA, 1992.

[27] ibid., pp. 110-132.

[28] ibid., p. 134.

The President at Company Six added:

> *"Our people, I think, are our strength in that they are proactive, dedicated to being innovative and to being leaders." (emphasis added.)*

Strong company culture may be a precondition to an informal structure that fosters alignment. One precondition for successful alignment of the informal structure may be a positive company culture. A business partner at Company Six stated:

> *"I really like the culture. People are pretty relaxed and not that conservative; it is a pretty up-to-date environment. People are active and outgoing. When I come to work, I feel like I want to come to work. I enjoy working and I know that I have had jobs in the past where I hated to come to work. I dreaded Monday morning. Whereas, here, I don't even think about it. It's like a second family. That's how the atmosphere is."*

Comments like this suggest that a company culture and informal networks that empower personnel and provide a positive work environment promote alignment and excellence in IS services. Alignment literature reinforces the importance of intangible factors. Personnel emphasize the value of being able to visualize the whole organization in order to see their division's contribution. It is important to nurture a culture of *human* communication and flexible interactions, as opposed to rigid, impersonal roles and models.[29] Indeed, how else would an organization take on the characteristics of a "second family"?

Alignment of the informal structure needs more attention. Alignment of the informal structure, however, has not commonly been discussed in the IS literature. This structure is not independent of the formal organization structure but supercedes it and gives it "breath" and "life." It has been noted that:

> Organizational competence will be based not on past principles of ownership, stability, and control, but rather on the emerging principles of interdependence, flexibility, and partnership. Such competencies include ways to engage and inspire people, to evolve teams and partnerships, and to acquire and use knowledge.[30]

The value placed on responsible leadership, knowledge networking, and multidisciplinary teaming may constitute an organizational response to the acknowledged importance of the informal structure. This value has been evident in organizations that already benefit from the freedom and flexibility inherent in virtual structures. As the Company Four CIO put it:

> *"Several different approaches [to supporting functional areas] exist in the company. Some are historical and/or partly due to the way the senior person wants to operate. There are some business units where IS provides everything – all the systems talent they require to get the work done ... There are other business units where they have their own IS staff (e.g., programmers). They do some of their own IS work and we do some IS work. There is no unit where we do nothing; we just do things to varying degrees."*

Practices such as this may already be embracing the necessary "embedding" of IT into the fabric of the organization. They may also be helping companies evolve so that they can function effectively in dynamic environments. The journey toward alignment, it seems, must take into account not only formal IS structure and strategy but also the team-based and networking factors that comprise the informal structure. In our view, research which investigates this form of IS alignment – trust, cultural ties, social bonds, virtual linkages, and fluid processes – is most welcome.

In Conclusion: Informal Structure May Be the Most Enduring Aspect of Alignment

To close, we highlight what we learned. First, we explicitly address the questions posed earlier (see Table 3).

We surmise, based on existing literature and the companies we examined, that the informal company structure may be the most enduring aspect of alignment – while the formal structure may be the most transient. The "snapshots" we took of the eight companies at different times during this study revealed consistent reliance on informal structures within these firms. While specific informal structures varied – i.e., they were not consistent or the same across firms – informal structures were repeatedly mentioned and were visible and strong.

[29] Luftman, J., and Brier, T., op. cit., 1999.
[30] Somerville, I., and Mroz, J.E., op. cit., 1997.

Table 3: Our Conclusions

Our Questions	Our Findings
Do firms achieve alignment in the ways suggested by academics? What preconditions to IS strategic alignment and IS structural alignment were consistently present in "best performing" companies?	In part, existing theory was confirmed. Several anticipated preconditions to IS strategic alignment were almost always present in the companies studied (see Table 2); however, fewer preconditions to IS structural alignment were always present.
To what extent are IS strategic alignment and IS structural alignment of concern to firms? Are IS strategic alignment and IS structural alignment equally important dimensions of overall IS alignment?	Our findings suggest that IS strategic alignment may be more important than the alignment of formal business units and IS structures. Further research is needed to confirm this.
Can we identify other dimensions of overall IS alignment – besides strategic and structural alignment – that are important and lend themselves to managerial intervention?	We discovered the importance of informal structures and bonds between line and IS personnel. This informal structure interacts with, and transcends, formal organization structures and strategies.

Our study also revealed relative consistency in formal strategy preconditions (that is, the strategic alignment preconditions were almost always in place in these high performing IS functions). And our study revealed some inconsistency in formal structures – meaning, the formal structural alignment components were not always clearly in place even though IS was demonstrating high performance.

These findings suggest that to improve overall IS alignment and performance, scarce management time and resources should be spent on improving the robustness of the informal organization (relationship-based structures that transcend the formal division of labor and coordination of tasks)[31] and on aligning business unit and IS strategies, but probably not on aligning formal structures.

As noted earlier, there have been two perspectives on how organizations achieve their ends. At one end of the spectrum is the perspective that organizations are rigid corporate entities devoid of personality that can be engineered. At the other end of the spectrum is the view that organizations are primarily social systems of interrelated elements where a change in one element affects all others. Our study supports the social system pole and the importance of earlier research on the social aspects of IS alignment. However, focusing on aligning the *formal* organization structure may focus on means, not ends – an investment in a more transient form of alignment – because managers are responsible for both ensuring that the required work gets done (a formal element) and predicting how individuals will be affected by decisions and how they will respond (informal elements).

Our findings suggest that IS excellence requires flexibility and fluidity, as seen in the informal structure, and not merely strict adherence to predetermined responsibilities and procedures, however commendable. The IS function typically has many customers (i.e., business partners), and they are all different. Also, business-partner needs and IS capabilities change continuously. At any given moment, one formal IS structure is unlikely to suffice; business units probably need multiple coexisting formal structures. It may be that a complementary informal organization provides multiple, overlapped, reinforcing links to strengthen the firm's ability to act as an integrated, aligned, high-performing unit over time. The informal organization can react quickly to internal and external shocks, and permit the organization to continue to excel while more formal strategies and structures catch up.

Although there has been much discussion in the IS literature of inter-organizational virtual networks (for example, strategic alliances), relatively little attention has been paid to internal (vs. external) networks. Studying such networks may be the most fruitful avenue for academics studying ways to enhance IS alignment and performance. While formal strategies and structures may be more visible, and easier to manipulate, clusters of activity and relationships (informal structures) may be more enduring. This may be bad news for executives seeking an alignment "silver bullet." We have no quick response for the CIO who

[31] Nadler, D., et al., op. cit., 1992.

wrote, "Our pain is really the manifestation of our desire for an alignment process that is simple, logical, repeatable, and proven."[32] Unfortunately, much that we observed about alignment is informal, impromptu, and even seemingly illogical at times.

In conclusion, our most important research finding may be that the formal IS structure matters less than we expected, and the informal structure matters more. A key goal of this study was to identify and examine components of IS alignment and to differentiate among these components in terms of their importance for IS performance. Based on our findings, it appears that the focus in the literature and in management practice on strategic alignment is warranted. However, the relative importance of the alignment of formal structures may be exaggerated. An important alignment component that appears to require additional emphasis in future management practice is that of the informal organization structure.

About the Author

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Appendix

Detailed Description of the Research Methodology

Our goal was to study and describe managerial practices visible in best-performing firms that serve as "alignment exemplars." Experiments and cross-sectional surveys did not fit well with our objectives because these methods are more useful for large-scale, quantitative examinations. Case research, involving ongoing, iterative conversations, backed up by supporting documentation, was more appropriate because it allowed us to observe, analyze, and obtain feedback on business and IS practices, and changes over time.

To identify eight best practice firms, we used a research database of approximately 170 North American IS business units. This database had been created in a previous IS alignment study and contained a number of business and IS alignment and performance measures (see Table 4 for definitions of these terms). To identify the top firms to be studied, the business units in the database were ranked from most impressive to least impressive based on the unweighted average scores of these measures. These firms were contacted by letter, invited to participate in the study, and promised a copy of the final report if they agreed to participate.

The researchers interviewed company executives from both IS and business units (see Table 5). Wherever possible, in addition to carrying out semi-structured interviews, the researchers gathered objective data. For example, annual company reports, organizational and IS departmental charts, documented business unit plans, and IS plans, when available, provided documentary information for analysis. Confidentiality was guaranteed for all unpublished company documents. In some cases, formal confidentiality agreements were signed before site visits were permitted.

The researchers took several precautions to ensure careful and accurate analysis and interpretation of data. First, although three researchers conducted the site visits and two researchers were present during any given interview, the lead researcher was present at *every* interview. This precaution provided a high level of continuity and an increased ability to compare and contrast the case studies accurately. Also, the presence of two researchers facilitated discussion of the interviews and company visits immediately after comple-

[32] Goldman, C., op. cit., 1999, p. 30.

Table 4: Definitions of Alignment and Performance

Construct	Working Definition
IS alignment	The "bringing in line" of the IS function's strategy, structure, technology, and processes with those of the business unit so that IS personnel and their business partners are working toward the same goals while using their respective competencies.
IS strategic alignment	The subset of IS alignment that concerns IS strategy and business unit strategy. This component involves both strategy content and processes.
IS structural alignment	The subset of IS alignment that concerns the formal structure of the IS function[33] and the business unit structure.[34]
IS performance	The overall effectiveness of the IS function as defined both by traditional measures, such as budget compliance, on-time delivery, and acceptable system response times, and contemporary measures of value added, such as adequacy of decision support tools for business partners, and networks to support external alliances.

tion, when tapes were transcribed, and when cases were analyzed individually.

The lead researcher made lists of practices and policies deemed to enhance alignment over time, and those that could potentially hinder alignment. One or more of the other researchers on the team (generally the second individual who conducted the particular site interview) then reviewed these lists. When the researchers were in agreement, this summary of observations about the firm was mailed back to the organization as described above. Executives within the firm then provided their feedback. Additional telephone conversations and interviews were held if necessary, and the company reports were finalized.

To verify that this approach to detecting consistent patterns within organizations was satisfactory, for each of the first two cases, original interview transcripts were provided to two IS colleagues not involved in this alignment research. They were asked to independently derive precondition patterns based on their reviews of the transcripts. We then examined their case summaries, and they critiqued ours. Although the preconditions were sometimes labeled differently (e.g., "formal IS plans exist" vs. "IS strategy and plans are well-documented"), and the researchers' lists highlighted additional, minor patterns, there was general agreement with no significant discrepancies.

After this validation of our approach to pattern derivation, we proceeded to analyze the remaining six cases. In order to identify alignment preconditions within each case study, the lead researcher read the transcripts for each company's set of interviews repeatedly, highlighting particularly relevant portions. This led to a single company "summary" which pooled observations revealed during multiple company interviews. Observations were then split into two lists: practices and policies believed to enhance alignment over time, and those that could potentially hinder alignment.[35]

[33] IS structure has been defined as the locus of responsibility, and total set of centralized/decentralized solutions, for the management of technology (e.g., computer operations, networking, and emerging technologies) and the management of the use of technology (e.g., systems development, help desk services) Brown, C.V., and Magill, S.L. "Alignment of the IS Functions with the Enterprise: Toward a Model of Antecedents," *MIS Quarterly* (18:4), 1994, pp. 371-403.

[34] Dimensions of organizational structure include formalization (amount of written documentation), specialization (degree to which tasks are subdivided), standardization (extent to which work activities are performed in a uniform manner), hierarchy of authority (who reports to whom and the span of control for each manager), complexity (the number of activities or subsystems within the organization), centralization (the hierarchical level that has authority to make a decision), professionalism (the level of formal education and training of employees), and personnel allocations (the deployment of people to various functions and departments). See Daft, R.L. *Organization Theory and Design*, West Publishing, NY, 1992.

[35] Due to space constraints, only those practices and policies promoting alignment are discussed in this article.

Table 5: Company Executive Interview Information

Interviewee	Information Provided
CEO/ President	Describe company planning processes, strategy and structure. Describe the importance of IS to business operations. Describe what you mean by IS alignment and IS performance. Discuss company policies and practices affecting alignment and performance.
CIO/ VP, IS	Describe IS strategy and planning processes. Discuss links between IS plans and business plans. Describe and evaluate the structure of the IS function. Discuss IS departmental policies and practices. Describe what you mean by IS alignment and IS performance.
CFO/ VP, Finance	Assess the business value of IS. Describe how business performance is measured. Describe how the IS department's performance is measured. Describe what you mean by IS alignment and IS performance.
Business Partner/ End User #1	Discuss business plans and IS plans. Evaluate the structure of the IS function. Describe what you mean by IS alignment. Describe relationships and communication between IS and other personnel. Describe contributions made by IS to business operations. Evaluate the IS function. Suggest changes to enhance IS effectiveness.
Business Partner/ End User #2	Discuss business plans and IS plans. Evaluate the structure of the IS function. Discuss IS alignment. Describe relationships and communication between IS and other personnel. Describe contributions made by IS to business operations. Evaluate the IS function. Suggest changes to enhance IS effectiveness.

The researchers compared and contrasted the eight summary lists in order to detect precondition patterns *across* (versus *within*) organizations. Those that occurred repeatedly (i.e., in several organizations) were duly recorded. Management attitudes, policies, and practices were then classified as preconditions of strategic alignment or structural alignment. These preconditions are the unitalicized row entries in Table 2.

