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AUTONOMY, PROCEDURAL JUSTICE, AND INFORMATION SYSTEMS PLANNING EFFECTIVENESS IN MULTINATIONAL FIRMS

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Abstract

Job characteristics and procedural justice theories offer an avenue through which to better understand information systems planning effectiveness in multinational firms. The first theory suggests that greater autonomy leads to greater perceptions of fair treatment, and the second suggests that perceptions of fair treatment lead to greater commitment and performance. A postal survey of 131 chief information officers of U.S. subsidiaries of multinational firms collected data to test hypotheses based on the theory. Data analysis revealed that autonomy for IS planning significantly predicted feelings of procedural justice, and procedural justice predicted IS planning with greater effectiveness. These findings not only lend support to the theories but, more importantly, also suggest that parent managers consider delegating greater planning autonomy to the managers of their foreign subsidiaries.

Keywords: IS planning, multinational firms, procedural justice, job design

Introduction

Managers of multinational firms use information systems as major tools to run their businesses and compete with their rivals (Deans et al. 1991). IS planning can help them choose new systems that are aligned with their business objectives. Not surprisingly, such planning is one of the most critical challenges confronting today's multinational executives (Spitze 2001).

On one hand, retaining control of IS planning decisions by managers at the parent level may increase the multinational's efficiency in implementing business strategy. On the other, autonomy in the job design of subsidiary managers can provide them with the flexibility needed to develop plans responsive to local conditions (Taggart 1997). A parent's decision about the extent of IS planning autonomy to delegate to subsidiary managers can thus be crucial. Greater autonomy can provide those managers with information systems vital to their local success and thereby the success of the multinational firm (Walsh and Milner 2002).

Procedural justice refers to the extent to which a decision process is perceived to be fair (Thibaut and Walker 1975). According to job characteristics theory, perceptions of such fairness result from autonomy for the subordinate manager (Hackman and Oldham 1976). According to the theory of procedural justice, these perceptions lead to the increased commitment of that manager (Kim and Mauborgne 1993a, 1993b). The perceptions have been shown to be associated with favorable outcomes for the organization in the human resources and accounting functions (Folger and Konovski 1989; Greenberg 1986; Hunton 1996). IS researchers too have suggested that higher levels of individual autonomy lead to higher levels of satisfaction, task commitment, and performance, although none of their studies explicitly considered job characteristics or procedural justice theories (Ives and Olson 1984; Lawrence and Low 1993).

The need to better understand IS planning in the especially difficult context of multinational firms provided one motivation for the current study (Tractinsky and Jarvenpaa 1995). The limited IS research using job characteristics and procedural justice theories provided another. This research undertakes to apply the theories to better understand the IS planning of subsidiaries of multinational firms.

Research Constructs

IS Planning: Practice and Autonomy

IS planning is the process of assessing the external and internal environments to identify new computer applications that support the business objectives of the organization (Premkumar and King 1994; Segars and Grover 1998). Mentzas (1997) divided it into five phases of activities: *strategic awareness*, *situational analysis*, *strategy conception*, *strategy selection*, and *strategy implementation planning*. These phases have been widely accepted in strategic management (Thompson 1967) and marketing (Cravens 1988), and have also been applied in IS research (Newkirk et al. 2003).

The objective of the *strategic awareness* phase is to increase management commitment to the planning process and to provide initial answers to major questions about the objectives of the organization and the issues it faces. The phase thus provides direction for the overall planning process.

The major purposes of the *situational analysis* phase are to arrive at a clear and documented diagnosis of the existing business and IT conditions in the organization, to identify problems and inefficiencies, and to understand the internal and external environments. The phase synthesizes a range of views on the strengths and weaknesses of the organization in the context of its environment, as well as on the management and planning of its information resources.

Strategy conception, the third phase of the process, is the envisioning of alternative future uses of information systems. It thus includes the identification of opportunities for competitive and performance advantages, and of scenarios for future growth.

Strategy selection constitutes the choice of new systems and processes. It includes specifications for data, applications development, and maintenance, as well as for the architecture to be implemented. It elucidates the functional, organizational, and technical models.

Strategy implementation planning includes the definition of concrete actions, the evaluation of budgetary requirements, and the study of time and organizational constraints. It elaborates upon issues of change management, plan coordination, and migration.

The current study used one construct to represent the extent to which the subsidiary had autonomy for each phase, and another construct to represent the extent to which the subsidiary practiced each phase.

IS Planning Effectiveness

A common way to evaluate strategic planning success is to assess the level of achievement of key objectives (Cameron and Whetton 1983; Venkatraman and Ramanujam 1987). Although organizations may differ in terms of their emphasis, strategic planning systems generally help them achieve several specific ones (Segars and Grover 1998). Thus Raghunathan and Raghunathan (1994) operationalized the effectiveness of IS planning using nine key planning objectives. They are the prediction of future trends, improved short-term IS performance, improved long-term IS performance, improved decision making, avoidance of problem areas, increased user satisfaction, improved systems integration, improved resource allocation, and enhanced management development.

Procedural Justice

Procedural justice refers to the extent to which a decision process is perceived to be fair (Thibaut and Walker 1975). Procedural justice is itself thus a perception rather than a reality. However, authors often use the redundant “feelings” or “perception” of procedural justice phrase, and to keep the reader focused, we occasionally do likewise in this paper.

In multinational firms, subsidiary managers have identified five components that lead them to believe they are treated fairly by the parent company. These components were derived from the responses of 63 multinational subsidiary presidents who identified the characteristics they felt made the strategic planning process between the parent firm and their subsidiary unit particularly fair or unfair (Kim and Mauborgne 1991). The characteristics were classified using a Q-sort that resulted in five components (i.e., survey items) representing procedural justice in multinational firms: (1) parent company managers are knowledgeable about local situations of subsidiary units, (2) two way communication exists in the multinational firm's decision making process, (3) the parent company is fairly consistent in making decisions across subsidiary units, (4) subsidiary units can legitimately challenge the strategic views of the parent company, and (5) subsidiary units receive an account of the multinational firm's final strategic decisions. Individually, these components had been applied in prior management research (Folger and Konovski 1989 Greenberg 1986; Leventhal 1980). They have since been used as a group to represent procedural justice in multinational firms (Kim and Mauborgne 1993b; Taggart 1997).

Hypotheses

The Effect of Autonomy on Procedural Justice

The job characteristics theory of Hackman and Oldham (1976) has long provided a foundation for understanding job design. It has been widely studied and validated (Taber and Taylor 1990). According to this theory, a key characteristic of a job is autonomy. Hackman and Oldham defined autonomy as the degree to which the job gives the worker freedom and independence in scheduling work and determining how the work will be carried out.

The theory asserts that autonomy causes “such psychological states as experienced meaningfulness of the work, experienced responsibility for outcomes of the work, and knowledge of the actual results of the work” (Hackman and Oldham 1976, p. 255). These states in turn produce satisfaction. The theory thus posits that autonomy causes job satisfaction.

A large component of job satisfaction is the perception of being treated fairly (Moorman 1991; Organ 1988). The perception of being treated fairly within decision processes such as information systems planning is, essentially, synonymous with the construct of procedural justice (Kim and Mauborgne 1993b).

Thus, multinational subsidiary managers, who are given autonomy in IS planning, would be expected to perceive that they are receiving fair treatment. They would do so in terms of Kim and Mauborgne's (1993a, 1993b) components of procedural justice. In other words with such autonomy, they would perceive that their parent company managers are generally knowledgeable about their local situation, that two-way communication exists, and that the parent is fairly consistent in making decisions for subsidiaries. They would further perceive that they can challenge the strategic views of the parent and that they receive a reasonable account of the parent's decisions. Thus, we hypothesize that

H1: The greater the autonomy for IS planning, the greater the procedural justice.

Because IS planning is comprised of five phases, *strategic awareness*, *situational analysis*, *strategy conception*, *strategy selection*, and *strategy implementation planning* (Mentzas 1997), five sub-hypotheses are advanced.

Strategic awareness deals with the determination of planning objectives, the organization of the planning team(s), and the obtainment of top management commitment. This phase is especially important because it influences the scheduling and carrying out of the activities in the other phases. Autonomy for it would increase the experienced meaningfulness and responsibility for not only itself, but also those later activities. Autonomy for it would further increase subsidiary managers' knowledge about actual results of the phase itself (i.e., the nature of the objectives, the rationale for the choices of the members of the teams, and the extent of top management commitment). As a result, autonomy would increase subsidiary managers' sense of satisfaction in terms of feeling they are treated fairly. Hence, we hypothesize

H1a: The greater the autonomy for *strategic awareness*, the greater the procedural justice.

Situational analysis deals with analyzing current systems and the environment. Autonomy during it “provide(s) the space and freedom for participants to challenge assumptions and create new interpretations” (Choo 1999, p. 24) about the potential impact of the environment on planned information systems within the organization. Under the job characteristics theory, this freedom

would promote satisfaction during the otherwise tedious and cumbersome process of situational analysis, and this satisfaction would encompass the perception of fair treatment among those doing that analysis. Thus, we hypothesize

H1b: The greater the autonomy for *situational analysis*, the greater the procedural justice.

Strategy conception deals with identifying opportunities and strategies for improvement. It especially demands creativity and imagination. Autonomy during it would produce meaningfulness and responsibility, and thus procedural justice.

In fact, strategy often emerges from the autonomous behaviors of organizational members when they suggest improvements and conceive new business opportunities (Burgelman 1983; Hart 1992). Such a generative mode of strategy making is said to be particularly well suited to firms operating in such complex environments as found in multinationals. It encourages experimentation, risk taking, and individual initiatives.

Autonomy for *strategy conception* thus informs subsidiary managers that they are allowed to have opinions and that these opinions are of value to the parent (Lind and Tyler 1988). In accordance with the job satisfaction theory, subsidiary managers with greater autonomy for IS planning would perceive greater fairness in their treatment. Thus,

H1c: The greater the autonomy for *strategy conception*, the greater the procedural justice.

Strategy selection identifies specific new business processes, IT architectures, and projects along with project priorities. Autonomy for *strategy selection* lets subsidiary managers choose the strategy that best meets their needs, and that they presumably will implement in order to facilitate the achievement of the subsidiary's business goals. Greater autonomy would increase their sense of responsibility, and thus job satisfaction in terms of feelings of fair treatment in this particularly critical activity. In fact, greater autonomy to choose a course of action from among multiple alternatives has been shown to lead to greater perceptions of fair treatment (Leventhal 1980). Thus, we hypothesize

H1d: The greater the autonomy for *strategy selection*, the greater the procedural justice.

Strategy implementation planning defines change management and action plans, the evaluation of action plans, and the definition of follow-up and control procedures. Autonomy for *strategy implementation planning* would place the responsibility for change management and action planning on subsidiary managers who are more knowledgeable about the conditions of the subsidiary than are parent managers. Greater autonomy would produce a sense of responsibility of the final outcome of the planning process and of the realization of its goals. Such ownership would result in greater job satisfaction in terms of the perception of fairer treatment. Thus,

H1e: The greater the autonomy for *strategy implementation planning*, the greater the procedural justice.

H1, like H2 and H3 below, is a main hypothesis used to organize sub-hypotheses. H1, H2, and H3 are not explicitly tested. However, confirmation of at least one sub-hypothesis is consistent with rejection of a null hypothesis and thus with some support for its central hypothesis. The use of such sub-hypotheses as specific predictions based on a main hypothesis is described by Kerlinger (1986).

The Effect of Procedural Justice on IS Planning Practice

The theory of procedural justice states that perceptions of being treated fairly motivate increased organizational commitment (Fonda and Guile 1999). The theory has been the subject of research for many years in the fields of management and criminology.

Two earlier theories underlie the theory of procedural justice. The first is social exchange theory (Blau 1964). According to it, the feeling of being treated fairly creates an obligation in subsidiary managers to reciprocate that fairness and act fairly themselves by committing to the strategic decisions of the parent company.

The second conceptual base is long-term, self-interest theory (Lind and Tyler 1988). According to this, organizational members are aware that their own unit's priorities and considerations may compete with those of other units. They recognize that their priorities cannot always be accommodated and may even have to be occasionally traded off in the organization. Thus instead of short-term gains, they look for organizational practices that assure them that over the long term, the interests of their unit will be

adequately protected. The presence of procedural justice provides subsidiary managers with this assurance and, therefore, increases their organizational commitment.

According to the theory, procedural justice inspires employees to a sense of citizenship and, therefore, to exhibit organizational citizenship behavior (Moorman 1991). Citizenship implies commitment to the organization and motivation to perform tasks that are deemed useful to it (Organ 1988). Citizenship behavior includes *personal industry* (i.e., diligence at performing one's job) and *individual initiative* (i.e., active participation in organizational issues) (Moorman 1991). Because IS planning is deemed a desirable practice in the organization (Ward and Peppard 2002), greater procedural justice would be expected to motivate subsidiary managers to perform it. At the same time, employees who feel they are treated unfairly would not be committed to the organization, would be less inspired to personal industry and individual initiative, and hence would not be expected to be motivated to perform it.

Greater procedural justice has been shown to predict commitment to the parent by subsidiary top managers in multinational firms (Kim and Mauborgne 1991), and to the federal government by managers in budget decision-making (Staley et al. 2003). It has also been shown to lead to higher levels of participation in organizational affairs by senior managers (Lau and Lim 2002). It would thus similarly motivate subsidiary IS managers to practice IS. Thus, we advance the following central hypothesis and corresponding sub-hypotheses:

- H2: The greater the procedural justice, the greater the practice of IS planning.
 - H2a: The greater the procedural justice, the greater the practice of *strategic awareness*.
 - H2b: The greater the procedural justice, the greater the practice of *situational analysis*.
 - H2c: The greater the procedural justice, the greater the practice of *strategy conception*.
 - H2d: The greater the procedural justice, the greater the practice of *strategy selection*.
 - H2e: The greater the procedural justice, the greater the practice of *strategy implementation planning*.

The Effect of IS Planning Practice on IS Planning Effectiveness

According to the theory, procedural justice is expected to inspire commitment to behaviors (i.e., the dependent variables in H2) that would produce improved performance. Previous research confirmed that expectation in terms of the improved performance for strategy conception and execution behaviors within multinational firms (Kim and Mauborgne 1993b). For example, bi-directional communication (a procedural justice characteristic) enabled the diffusion and sharing (i.e., behaviors) of perceptions, knowledge, and ideas that promoted learning. The ability to question and refute parent decisions created an invigorating atmosphere that helped managers shun complacency. The familiarity of parent managers with subsidiary situations fostered an appreciation of global perspectives by subsidiary managers. Comprehensive explanations of decisions gave subsidiary managers a better understanding of the parent's vision. Finally, consistent decision making procedures fostered trust and collaboration.

In the current study, procedural justice would be expected to inspire the IS planning behavior which, in turn, would be expected to enable the organization to meet the key planning objectives identified by Raghunathan and Raghunathan (1994). For example, the practice of planning would enable the organization to improve its prediction of future trends and avoid problem areas through the knowledge it gains about them. It would enable the organization to improve both short- and long-term performance by furnishing goals and milestones for achieving them. It would improve managerial decision making and user satisfaction by recommending those new information systems that best meet manager and user needs. It would improve resource allocation and systems integration by analyzing technology needs and predicting how and when to meet them. Finally, it would facilitate management development by recommending organizational changes. Thus, we hypothesize

- H3: The greater the practice of IS planning, the greater the effectiveness of IS planning.

In the practice of *strategic awareness*, the determination of the planning objectives, the organization of the planning teams, and the obtainment of top management commitment can produce the achievement of the objectives by focusing the most skilled contributors on the planning endeavor from its outset. In fact, the appropriateness of planning objectives (Venkatraman and Ramanujam 1987), the performance of planning teams (Morgan and Piercy 1993), and top management commitment to the plans (Teo and Ang 1999) all have been shown to individually improve planning effectiveness. Thus, we hypothesize

- H3a: The greater the practice of *strategic awareness*, the greater the effectiveness of IS planning.

The practice of *situational analysis* involves the recognition of internal strengths and weaknesses via the analysis of current systems. This can improve the organization's performance because it gives the organization the information necessary to enable it to plan more effective new information systems by helping it build on its strengths and avoid the consequences of its weaknesses (Choo 1999; Houben et al. 2002).

The analysis of external opportunities and threats via the study of the environment can also improve planning effectiveness (Choo 1999; Houben et al. 2002). Organizations scan the environment to understand external forces of change, and can thus develop responses that secure their position in the future via the newly planned information systems (Capps and Hazen 2002; Choo 1999). Thus, we hypothesize

H3b: The greater the practice of *situational analysis*, the greater the effectiveness of IS planning.

The practice of *strategy conception* identifies the IT objectives, opportunities, and strategies that can form the foundation of the plan. It enables the eventual selection of the most appropriate ones, and thus facilitates the effectiveness of the planning itself. The identification of such strategic opportunities in prior research has been linked with organizational effectiveness (Guimaraes 2000). Thus, we hypothesize

H3c: The greater the practice of *strategy conception*, the greater the effectiveness of IS planning.

The practice of *strategy selection* chooses the new business processes and standardized IT architectures that will be implemented according to the plan. The selection of the most appropriate ones can foster the achievement of the planning objectives. Correctly assigned priorities for IT projects in this phase have led to improved productivities (Alexander 2001). Thus, we hypothesize

H3d: The greater the practice of *strategy selection*, the greater the effectiveness of IS planning.

The practice of *strategy implementation planning* involves defining change management and action plans, evaluating action plans, and defining follow-up and control procedures. Action plans enable the organization to prioritize new initiatives based on needs, available resources, and prerequisites (Teo and Ang 1999). Change management improves the likelihood of worker acceptance of the plan. Follow-up and control procedures enable the organization to monitor the progress of the implementation of the plan. The failure to implement can cause lost opportunities, duplicated efforts, incompatible systems and wasted resources; failure to meet IS planning objectives; dissatisfaction with and reluctance to continue strategic IS planning; and problems in establishing and maintaining priorities in future IS planning (Gottschalk 1999). Thus, we hypothesize

H3e: The greater the practice of *strategy implementation planning*, the greater the effectiveness of IS planning.

Methodology

A field survey of chief information officers of U.S. subsidiaries of multinational firms contained five-point Likert scale items to measure the research constructs. One construct was the extent of subsidiary autonomy for each planning phase and another was the extent of the practice of each of those phases. A third construct was the extent of achievement of each IS planning objective multiplied by the extent to which the organization sought each objective. Subjects responded to nine items for the extent of achievement and nine for the extent sought. The extent of achievement of each objective was multiplied by its extent sought to produce a weighted planning effectiveness construct to facilitate comparability between subjects (Hoffman et al. 1992). The fourth construct was procedural justice.

The survey also contained demographic questions about the participant, the subsidiary company, and its parent company. The growing interest in multinational firms as well as the relatively sparser research literature on such firms based outside the United States motivated their choice as the subjects of this study.

Previous studies have validated the IS planning practices phases construct (Newkirk et al. 2003), the IS planning effectiveness construct (Raghunathan and Raghunathan 1994; Wang and Tai 2003), and the procedural justice construct (Taggart 1997) using Cronbach's alpha and factor analysis. Other studies have validated the procedural justice construct using Cronbach's alpha alone (Johnson et al. 2002) and structural equation models (Chawla and Kelloway 2004).

Nevertheless, the instrument was pilot tested with the senior IS executives of five manufacturing subsidiaries of foreign firms. The senior author met with each participant independently at his or her workplace, and reviewed the purpose of the survey. The

participant was asked to read the sample cover letter and fill out the survey, making any comments during this time. After completion, the senior author discussed the survey with the participant, and asked for comments regarding the presentation of the questions and the utility of the cover letter in gaining responses. The pilot subjects suggested minor revisions to the questions and the cover letter. They were duly incorporated in the final version.

A mailing list was obtained from Applied Computer Research (ACR) in Phoenix, AZ, for a one-time fee-based use. It included the name, telephone number, and mailing address of CIOs of about 11,000 manufacturing companies based in the United States. This list was compared to a list of foreign-owned subsidiaries in the United States from the *Directory of Foreign Firms Operating in the U.S.* The *Directory* listed about 4,000 such subsidiaries. Comparison of the ACR list and the *Directory* enabled the identification of 416 CIOs of the subsidiaries in the United States to whom the survey was mailed.

To increase the sample, 490 manufacturing subsidiaries with more than 50 employees but unlisted in the ACR list were identified in the *Directory*. This group of firms had contact information specified for the CEO rather than the CIO. The survey was mailed to the CEO with a cover letter requesting it be forwarded to the CIO of the organization.

Within 6 weeks of the initial mailing, 21 of the 906 (416 + 490) firms had returned completed surveys. To determine why they had not returned more and to encourage greater participation, the senior author and an assistant phoned nonrespondents. Each nonrespondent received an average of three calls. When the individual was unreachable, the caller left no message, but phoned again after a few days. On the fourth try, the caller left a message requesting participation and mentioning that another survey would be mailed within a few days. In all, of the 906 possible subjects, 137 were unreachable because the subject had moved, or the company had closed, or was no longer a subsidiary. Of the remaining, 98 declined to participate because of corporate policy. Such declining is consistent with observations that subsidiary managers often lack the authority to reply to organizational surveys (Tomaskovic-Devey et al. 1994). A total of 131 CIO surveys were thus received from the mailings so that the effective response rate was about 19.5 percent (131/671). Such a rate is respectable, but perhaps the discomfort of non-English speaking subsidiary managers with English language surveys may have depressed it (Harzing 2000).

The industries of the respondent companies ranged from fabricated metal products (16.8 percent), industrial and commercial machinery and computer equipment (11.5 percent), electronic and electrical equipment and components (10.7 percent), transportation equipment (8.4 percent), to chemical and allied products (7.6 percent) among others.

Of the respondent subsidiary firms, 44 percent had local sales revenues of less than \$100 million. About 33 percent had sales between \$100 million and \$250 million, while the remainder had sales of more than \$250 million. Fifty percent had less than 500 employees locally, 19 percent had between 500 and 1,000 employees, and the rest had more than 1,000 employees.

Of the parent firms, about 35 percent had worldwide sales revenues of less than \$1 billion. Another 33 percent had sales between \$1 billion and \$5 billion, while the remainder had sales of more than \$5 billion. Fifty-seven percent had fewer than 5,000 employees worldwide, 20 percent had between 5,000 and 15,000 employees, and the rest had more than 15,000 employees.

The respondents had been with their companies for an average of 9 years. They had nearly 14 years of experience in IS and 15 years in manufacturing. Sixty-seven percent had at least a 4-year college degree.

Data Analysis

Nonresponse Bias

The returned surveys were examined for nonresponse bias. Late respondents were treated as surrogates for nonrespondents (Armstrong and Overton 1977). Multivariate analysis of variance tested whether differences between early and late respondents for several key variables (i.e., subsidiary employees, subsidiary sales, parent employees, and parent sales) were associated with different responses. The analysis indicated no significant differences in any (Wilks' $\Lambda = .83$, $p = .281$). This is consistent with the absence of nonresponse bias.

Common Method Variance

To test for common method variance, a Harman's one factor test was performed (Harman 1967; Podsakoff and Organ 1986). All the variables were entered into a principal components factor analysis with varimax rotation. According to this technique, if a single factor emerges from the factor analysis or one "general" factor accounts for most of the variance, then common method

variance is deemed present. However, the results of the analysis revealed 11 factors with eigenvalues greater than 1, and no 1 factor accounting for more than 26.7 percent of the variance. These results are consistent with the absence of common method variance.

Content Validity

The derivation of the scales from prior research (Kim and Mauborgne 1991, 1993a, 1993b; Mentzas 1997; Raghunathan and Raghunathan 1994) supports their content validity. Their pilot testing with five experts does likewise.

Reliability

Cronbach's alpha for each construct exceeded .80, well above the .70 generally accepted criterion (Kerlinger 1986). Furthermore, the composite reliabilities of all the scales were greater than .90. These findings thus support the inter-item reliability of the constructs.

Convergent Validity

The partial least squares procedure utilizing PLS-Graph (Version 3.0) was used to assess scale convergent validity (Chin 1998). Unlike such covariance-based structural equation modeling packages as LISREL and EQS, PLS does not utilize the typical confirmatory factor analysis and fit indicators (Chin 1998). The stability of the estimates was tested using a bootstrap resampling procedure (200 samples). For each of the latent constructs in the study, the observed variables loaded significantly ($p < .001$) on their respective latent factors with almost all of the path loadings exceeding the recommended value of .707 (Hair et al. 1998). Furthermore, the average variance extracted (AVE) for each construct exceeded .50 (Hatcher 1994). These results support the convergent validity of the constructs.

Discriminant Validity

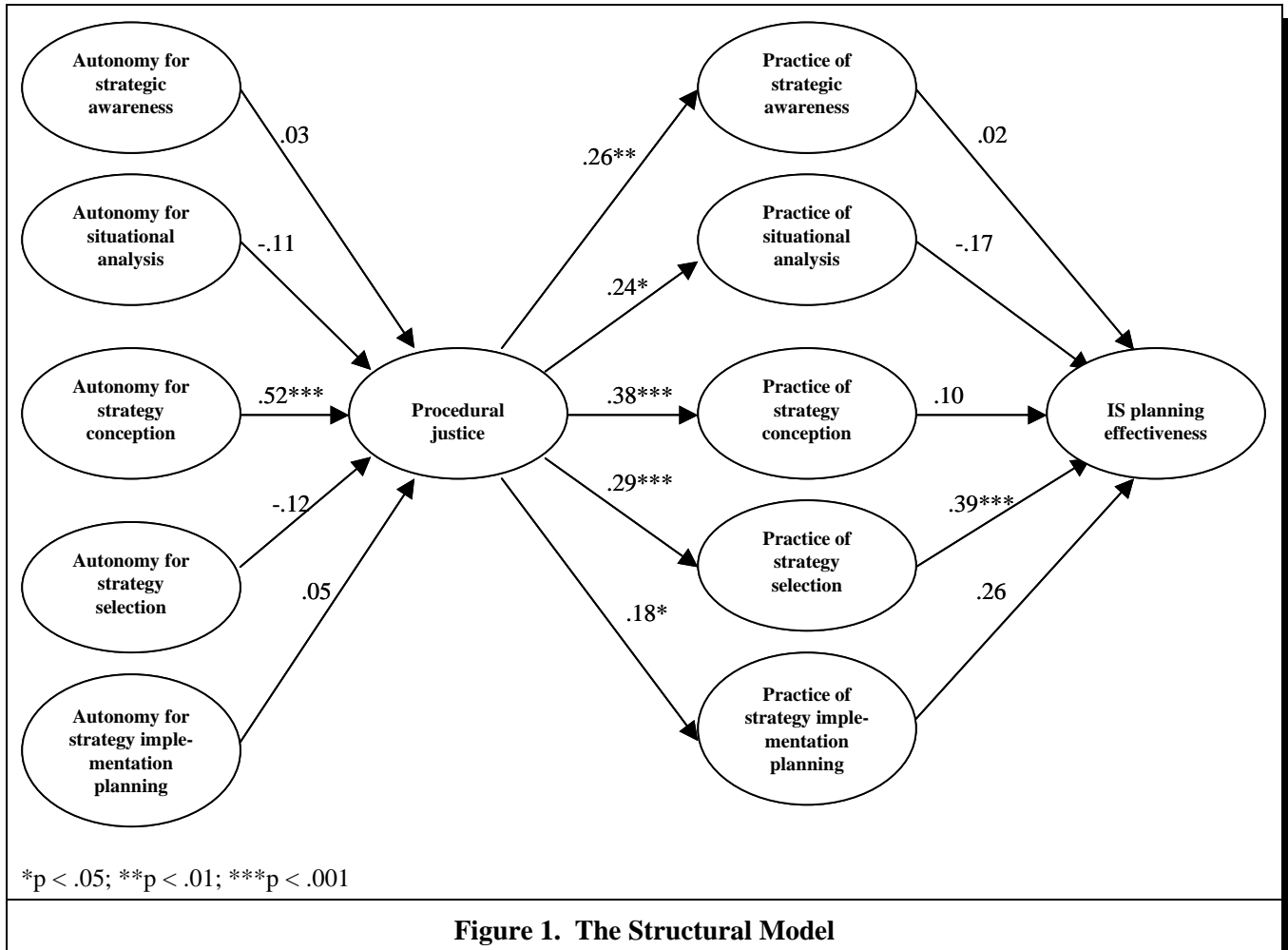
Support for discriminant validity was shown through the use of an AVE test (Hatcher 1994). In this test, the square root of the AVE for each pair of constructs was compared to the correlation between them (Chin 1998). In each case the square root of the AVE was greater than the correlation. Moreover, no observed variable cross-loaded on another construct. Thus discriminant validity was established (Hatcher 1994).

Structural Model

The squared multiple correlation (R^2) for the dependent construct in the structural model is similar to R^2 in a regression model and thus measures the percentage of the construct's variance explained by the model. The value of R^2 for procedural justice was .22 ($F = 6.77$, $df = (5, 120)$, $p < .001$) and for IS planning effectiveness was .32 ($F = 6.27$, $df = (9, 120)$, $p < .001$) (Falk and Miller 1992). Howell's (2001) analytic method confirmed procedural justice as a mediating variable between IS planning autonomy and IS planning practice.

The bootstrap procedure with 200 samples was used to calculate the significance of the path coefficients (Chin 1998). Figure 1 shows the structural model. The path from *strategy conception* to procedural justice (H1c) was significant ($p < .001$). Also significant were those from procedural justice to *strategic awareness* (H2a) ($p < .01$), *situational analysis* (H2b) ($p < .05$), *strategy conception* ($p < .001$) (H2c), *strategy selection* ($p < .001$) (H2d), and *strategy implementation planning* ($p < .05$) (H2e). Finally, the path from *strategy selection* to IS planning effectiveness was significant ($p < .001$) (H3d).

To control for nationality of the parent company, six main nationality groups (Canadian, German, Japanese, British, Swiss, and Scandinavian) represented in the survey data were dummy coded using the remaining countries as the reference category. The nationality variables were included in the PLS-Graph model as independent formative variables. The paths from the United Kingdom and Switzerland were significant, indicating that these groups differ from others in the model.



Discussion

The study found support for all three central hypotheses, namely that greater autonomy for IS planning is associated with greater procedural justice, greater procedural justice is associated with greater practice of IS planning, and greater practice of IS planning is associated with greater effectiveness of IS planning for the subsidiary. It also found support for 7 of the 15 sub-hypotheses. These findings are consistent with job characteristics (Hackman and Oldham 1976) and procedural justice theories (Kim and Mauborgne 1993a, 1993b; Organ 1988). According to them, when managers receive more autonomy, they are more satisfied and they feel that they are treated more fairly (Hackman and Oldham 1976). When they feel that they are treated more fairly, they work harder and perform better (Kim and Mauborgne 1993a, 1993b; Organ 1988). In the current study, subsidiary managers with greater autonomy acknowledged greater procedural justice, and those acknowledging greater procedural justice practiced IS planning more effectively.

Sub-hypothesis 1c predicted that greater autonomy for *strategy conception* would lead to greater procedural justice. This sub-hypothesis was strongly supported ($p < .001$), whereas the other sub-hypotheses (1a, 1b, 1d, and 1e) in which planning autonomy predicted procedural justice were not. Perhaps *strategy conception*—that is, envisioning alternative uses of information systems, projecting scenarios for future growth, and identifying opportunities for competitive and performance advantages—requires the greatest imagination and creativity in the planning process. Perhaps planners’ appreciation for the freedom to be creative produces support for this sub-hypothesis (Brandt 2002).

The research also found support for sub-hypotheses 2a through 2e, that is, greater procedural justice is associated with greater practice of *strategic awareness* ($p < .01$), *situational analysis* ($p < .05$), *strategy conception* ($p < .001$), *strategy selection* ($p < .001$), and *strategy implementation planning* ($p < .05$). Perhaps procedural justice had the strongest predictive effect (i.e., it had the highest coefficient) on *strategy conception* because that phase requires the greatest creativity (Schlender and Sung 2001) and creativity thrives in an environment of freedom (DiPietro 2003). Interestingly, *strategy conception* had the highest mean for extent practiced.

Procedural justice had a relatively weak predictive effect on *situational analysis* (i.e., with the second lowest coefficient). Perhaps this was because that phase is the most procedurally based and thus least creative (Choo 1999; Ngamkroekjoti and Johri 2000).

On the other hand, procedural justice had its weakest effect on *strategy implementation planning* (i.e., with the lowest coefficient). Perhaps procedural justice does not motivate *strategy implementation planning* as much, because subsidiary managers know in advance that implementation will be the major impediment to successful IS planning (Gottschalk 1999). Interestingly, *strategy implementation planning* was the phase with the greatest autonomy and the one least practiced (albeit just slightly) in the respondent firms.

Sub-hypothesis 3d predicted that greater practice of *strategy selection* would be associated with greater effectiveness of planning. This sub-hypothesis was strongly supported ($p < .01$), though the other sub-hypotheses related to the impact of the practice of planning were not. The rationale for the sub-hypothesis was that autonomy for this phase will let subsidiary managers select the strategy that best meets their needs. The support of this sub-hypothesis confirmed the expectation that subsidiary managers produce more effective IS plans when they practice *strategy selection*. *Strategy selection* is perhaps the focal point of the IS planning process. The three preceding phases, *strategic awareness*, *situational analysis*, and *strategy conception* all set the stage for the final selection of a strategy. The final IS planning phase, *strategy implementation planning*, is the realization of the selected strategy. *Strategy selection* is, in a sense, the culmination of IS planning. Interestingly it was the phase with the lowest autonomy. Perhaps subsidiary managers realize that *strategy selection* is so important, and are especially frustrated by their lack of autonomy for it.

Implications

Implications for Researchers

Of the five phases of IS planning, only autonomy for *strategy conception* (H1c) predicted procedural justice. Future researchers could investigate reasons for the lack of support for the expected relationships of *strategic awareness*, *situational analysis*, *strategy selection*, and *strategy implementation planning* with procedural justice. We have suggested that the creativity inherent in *strategy conception* in an autonomous environment may have distinguished that phase from the others, but future researchers might seek reasons that the other phases did not predict autonomy. Furthermore, the negative (albeit insignificant) paths from situational analysis and strategy selection to procedural justice are counterintuitive and need to be explored further.

The practice of *strategy selection* predicted effective planning (H3d). The unsupported relationships between the practice of the other four planning phases (*strategic awareness*, *situational analysis*, *strategy conception*, and *strategy implementation planning*) with the dependent variable also provide grounds for future study. The current study speculated that because *strategy selection* culminates the planning process, it may be the most critical to success. Future researchers might seek reasons that the other four phases did not predict success.

The application of the job characteristics and procedural justice theories in this study demonstrates their usefulness in IS research. Future researchers might apply the theories in other areas of IS where IS employee motivation can be a key element of the research.

One limitation of the current research was the use of single respondents for each firm. Although the test for common method variance did not reveal any problem, future research should employ multiple respondents from each firm. A second limitation of the current study was its use of a subjective dependent variable. Although such measures are common in planning research, future studies might attempt to employ a more objective one. Finally, all of the nations represented in the current study were highly industrialized and sophisticated in IT use. Results might differ if the parent or subsidiary firms were in less developed nations.

Implications for Practitioners

This study provides implications for practitioners. First, it draws their attention to the potential impact of job design and of procedural justice. They may use the items in the measures of IS planning and procedural justice to help them assess the autonomy and feelings of fair treatment by subsidiary managers in their organizations.

The study suggests that parent managers might want to create feelings of procedural justice in their subsidiary IS managers because procedural justice appears to inspire IS planning activities and those activities predict planning effectiveness. Parent managers might be especially concerned about procedural justice in terms of *strategy selection* because it had the highest impact on planning effectiveness.

The study also suggests that parent managers of multinational firms may be able to create the feeling of procedural justice for those subsidiary IS managers by designing those managers' jobs with more autonomy. Parent managers might do so especially for *strategy conception* in the planning process because autonomy for it had the highest impact on procedural justice.

At the same time, subsidiary managers may want to seek more IS planning autonomy. The results in this study suggest they may want to attempt to persuade parent managers to grant it to them in order to improve their IS planning effectiveness.

Conclusion

This research has contributed to a better understanding of the management of information systems planning in the foreign subsidiaries of multinational firms. By validating instruments for planning, procedural justice, and planning effectiveness, and by showing that greater autonomy for IS planning predicts greater feelings of procedural justice and that greater procedural justice predicts IS planning effectiveness of the subsidiary, the study lays the groundwork for the entrustment of more autonomy to the subsidiaries of multinational firms, and for increased future research in this area.

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