JOURNAL OF INTERNATIONAL BUSINESS RESEARCH

Balasundram Maniam
Editor
Sam Houston State University

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JOURNAL OF INTERNATIONAL BUSINESS RESEARCH

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Bala Maniam
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DO COLLECTIVIST TEAMS MATTER?
EFFECTS OF PROJECT GROUP CONTEXT AND INTERDEPENDENCE ON INNOVATIVE CAPABILITIES

Russell Teasley, North Georgia College and State University
Fumio Kodama, Shibaura Institute of Technology, Tokyo
Richard Robinson, University of South Carolina

ABSTRACT

The information processing dynamics of 27 R&D workgroups were studied within nine Japanese multinational firms. R&D workgroups developed manufacturing applications for subsidiary deployment worldwide. The study tested fit/performance relationships and a set of workgroup variables as moderators. The dependent measure, technology transfer effectiveness, was a composite of productivity, project effectiveness, and group satisfaction. Testing of the research model evidenced only moderate support for the central fit relationship, but significant moderating effects of managerial support, technology policy, training, and interdependent feedback and rewards. The findings contribute a unique behavioral perspective to the international body of innovation and technology management literature.

INTRODUCTION

Scholars have long noted the benefits of innovation and entrepreneurship for the competitive advantage of organizations (Burns and Stalker, 1961; Kanter, 1988; Damanpour, 1991; Hitt, Ireland, Camp and Sexton, 2001, Tushman and O'Reilly, 2002). In today's global economy, escalating competition requires that organizations continuously craft appropriate capabilities to achieve survival through innovation (Barney, 1991; Rothaermal and Hess, 2007). Innovative capabilities are organizational capacities constructed from tangible and/or intangible resource combinations that evolve new forms of competitive advantage. Innovative capabilities might exist in such mission-critical activities as basic research, technological scanning, product or process development, or organizational learning (Burgleman, Kosnik and bon den Poel, 1988). Each of these capabilities relies on specialized knowledge as a necessary but not sufficient resource for realization. Indeed, specialized knowledge resources constitute a common thread enabling all forms of innovation. However, an additional thread of innovation is the human resources that create, share and exploit that knowledge to their competitive advantage.

The dynamics of innovation are often accomplished through teams or small groups of human resources. To meet constraints of the new global environment, organizations have increasingly embraced work groups and teams as structural responses to enable their survival. Teams are characteristic of organic (vs bureaucratic) organizational forms that facilitate innovation through more rapid, flexible adaptations to their environments (Burns and Stalker, 1961; Lawrence and Lorsch, 1967). Paralleling this transformation in organizations has been a rapidly growing body of research on the structure and functioning of small groups and teams (Kozlowski and Bell, 2003). As the body of small group and team research has grown, its authorship has migrated more from its traditional home of social psychology to the fields of organizational psychology and organizational behavior (McGrath, 1997). This migration reflects the importance of teams to business scholars that seek a better understanding of how group processes contribute to the competitive or innovative capabilities of organizations. In addition, research at the team- or group level exhibits particularly meaningful clues for understanding technology's role in facilitating innovation, organizational effectiveness, and consequent competitive advantage (Fry, 1976; Tushman and Katz, 1980; Ancona and Caldwell, 1992; Keller, 1994).

The present study analyzes team-level technology transfer as a capability to support sustainable innovation and corporate entrepreneurship. Leonard-Barton (1991) defined technology as any tool, technique, product, process, physical equipment, or method of doing or making by which human capability is extended. Technology transfer occurs wherever systematic, rational knowledge developed by one group or institution is embodied in ways of doing things by other groups or institutions (Brooks, 1966). These definitions align with an organizational learning theme of innovation and imply a distinct relocation of knowledge between both a supplier and a receiver of technology. It further implies that relocation is successful or effective, only when the transfer is complete and adds value to a receiving team's competencies. As portrayed in the receiver-active paradigm (Kodama, 1993), technology transfer effectiveness ultimately depends upon the receiving team and its intensity of engagement in the transfer process. This perspective leads us to conclude that the receiving team is a notably suitable unit of analysis for investigating technology transfer capabilities.

Of particular interest to technology transfer research is a period of Japanese history dating from approximately the dusk of World War II to the dawn of the 21st century. Japan experienced extraordinary economic growth during this period based on rapid domination of global markets and an unprecedented, nationwide system of entrepreneurship (Abegglen and Stalk, 1985). A cultural force was set in motion with the post-war rebuilding of Japan that fostered a growing appetite for the world's leading organizational systems and technologies (Westney, 1993). Research documented a cultural proclivity during this time for the institutionalization of technology transfer characterized by rapid product and process development, globalization of its markets, as well as the pervasive creation and exploitation of knowledge (Mansfield, 1988; Clark and Fujimoto, 1989; Nonaka and Takeuchi, 1995). Although Japan experienced severe recession and inevitable

contraction during the late 1990's, its preceding expansionary period is an exciting setting to gain insights about the technological capabilities of its organizations.

Japan's entrepreneurial resilience was, to a large degree, based upon effective principles of technology transfer (Kodama and Morin, 1993). Japanese technology transfer was an aggressive form of knowledge creation based on information processing both within and outside corporate boundaries. Science-based universities in both the U.S. and Europe were systematically scouted by Japanese technology seekers, who contributed substantially to the nearly 42,000 contracts for foreign technology imports between 1951 and 1984 (Abegglen and Stalk, 1985). Japanese were noted for their insistent pursuit of consumer information and the exploitation of foreign markets based on quality products tailored to specific needs of users (Westney and Sakakibara, 1985). Information collaboration involving cross-functional teams and entire supplier/customer networks energized early product development cycles (Clark, 1991; Nonaka and Takeuchi, 1995). These information processing strategies elevated Japan's entrepreneurial notoriety and branded the nation with a unique and dominant style of technology transfer.

Cultural scholars have noted the priority Oriental societies place on collectivist attributes that foster cohesive group behaviors (Hofstede, 1983). This priority stems from the pervasive influence of Confucianism throughout East Asia (Levinson and Christensen 2002). Confucianism is a quasi-religious philosophical system that incorporates reciprocity, relationships and social harmony as cornerstones of its beliefs. According to Hofstede, social systems (cultures) vary on a dichotomy between individualism and collectivism, based on the value it places on relationships between individuals and their fellow individuals. At one extreme, individual ties are very loose and values of individual self-interest prevail. At the other extreme are collectivist societies where the interpersonal ties are very tight and values more group-determined. Hofstede noted that in collectivist societies individuals are raised to look after the interests of their referent group and to honor opinions of the clan at the expense of their individual motivations. In exchange they enjoy reciprocal treatment from their group and protection from conflict or trouble.

Research substantiates linkages between team effectiveness and collectivist notions such as cohesion (Hambrick, 1995), coordination (Guastello and Guestello, 1998), cooperation (Wegner 1995), group emotion (Barsade and Gibson, 1998), and collective efficacy (Bandura, 1997). These constructs are each potential antecedents for superior group process that may "grease the wheels" for effective technology transfer. Furthermore, Confucian mentality is associated with individual characteristics of cooperation, self-effacement, and the preservation of "face" in relationships (Flowerdew, 1998). Cooperation should ease goal accomplishment and reciprocal good-will between team members. Self-effacement denotes the trait of humility that, unlike arrogance, fuels a non-hostile team climate. In addition, the notion of saving face should build personal accountability and a team atmosphere of trust. The present research views these characteristics as attributes of Japanese project teams that render a particularly interesting group setting for technology transfer research.

Much of the group and team research has been aggregated in various literature reviews or meta-analyses that categorize the domain into various configurations or taxonomies. Kozolowski and Bell (2003) published one such review. The authors noted that extant literature surfaced six characteristics distinguishing the literature's most compelling influences on team structure or process: a) team's external environment or organizational context, b) interdependence, c) membership diversity and collocation, d) team boundary permeability, e) internal coupling requirements, and f) temporal characteristics or team life cycle. Campion and colleagues (1993) distinguished a different but related set of considerations or themes for designing effective work groups: a) context, b) interdependence, c) composition, d) job design, and e) process. Both typologies are similar regarding their first three characteristics. Team or group context reflects influences or contingencies stemming from the team's external environment (Doolan, Hacker and Aken, 2003). Interdependence refers to different ways team members rely on each other for resources, decision making, or group-determined recognition or rewards (Allen, Sargent and Bradley, 2003; Katz-Navon and Erez, 2005). The present study draws on the themes of team context and interdependence to propose a set of moderating variables for explaining variance in its technology transfer model.

The remainder of the manuscript describes a group-level study of Japanese technology transfer depicted as a receiver-active capability to enhance corporate entrepreneurship. Its research sample was taken from project teams in large Japanese multinational firms that developed manufacturing technologies to serve their global operations. The multinational scope of these projects constituted an international venue of operation. The study builds upon earlier works of the authors that a) developed the relevant research model (Teasley and Robinson, 2005), and b) tested associated assumptions and contingency hypotheses (Teasley and Robinson, 2006). Elements of the prior studies are included herein to provide a foundation for testing the team variables that are the focus of the present study. Data for the study were collected from Japanese process development project teams during the 1995 apex of Japan's most economically competitive period.

The following section discusses a contingency analysis to assess the information processing patterns of the development teams and the fit of those patterns with their technological environments (Galbraith, 1973: Keller, 1994). It then describes several tests are detailed that measure the influence of project fit on three technology transfer effectiveness variables. In addition, the team variables are evaluated for their moderating effects on the relationship between project fit and technology transfer effectiveness. We focus significantly on these latter findings to shed a better understanding on the potential contribution of organizational behavior to the research of innovation and technology management.

THEORETICAL DEVELOPMENT

Project teams characterize the composition of work units that conduct technology transfer tasks, particularly in large or more mature organizations (Hobday, 2000; Thieme, Song and Shin, 2003). Project teams are typically small groups, multi-disciplinary and focused on the accomplishment of discrete project goals such as those required by technology transfer environments. The structural role of projects is well-established within product development, innovation and corporate entrepreneurship literatures (Tushman, 1978; Ancona and Caldwell, 1992; Cooper, 2001; Kim and Wilemon, 2007). However, with a few exceptions (Keller, 2001; Drach-Zahavy and Somech, 2001; Doolen, et al, 2003; Caldwell and O'Reilly, 2003; Lee, Won and Chon, 2005), little description exists on the behavioral aspects of project teams in technology transfer environments. One goal of the present research is to add understanding to that important area of inquiry. The following sections, therefore, elaborate on two facets of theoretical development to establish a framework for linking small group behavioral phenomena to those of technology transfer environments. The first facet proposes a set of contingency relationships that constitute the central features of information processing technology transfer model. The second facet draws on an organizational behavioral perspective to hypothesize the additional variance explained by several small group variables from the organization behavior literature.

Discussion begins with the contingency relationships. Building on the receiver-active perspective, two situational dimensions are useful to describe the structural information environment facing technology receivers (Perrow, 1967, Weick,1990): a) "uncertainty", which is the degree that a receiver possesses needed information about a technology, and b) "equivocality" (Daft and McIntosh, 1981; Sicotte and Langley, 2000; Song and Montoya-Weiss, 2001; Bstieler, 2005), which is the degree that a technology is ambiguous to a receiver. Considered together, these two dimensions determine a technology's "information processing requirements" (Keller, 1994). Based on Perrow's notions of uncertainty, which he termed "variety", and equivocality, which he termed "analyzability", technologies can be ordered into four unique categories: routine, craft, engineering, and non-routine. By logically partitioning the environmental context, these dimensions set the foundation for a structural contingency approach to assessing technology transfer effectiveness (Lawrence and Lorsch, 1967). Figure 1 illustrates the contingency relationships.

To effectively transfer technology, a project must alter its structural "information processing capabilities", to meet the contextual demands of technology's "information processing requirements". Decision makers should consider the informational requirements of their projects as they design technology transfer strategies. They can accomplish this design through influencing the information processing capabilities of receiver groups. By matching the amount of processed information to a technology's uncertainty (Galbraith, 1973; Tushman and Nadler, 1978), and matching the richness of the information to its equivocality (Daft and Lengel, 1986), managers can maximize the flow of technology through its transfer cycle. "Information amount" refers to the

quantity of information gained from a relevant network of sources (Song, Xie and di Benedetto, 2001). "Information richness" is defined as the ability of information to enhance understanding through the utilization of various media types (Rice, 1992). Figure 1 reflects the notions of structural contingency theory with the four categories of technological requirements (routine, engineering, craft, non-routine) and their corresponding information processing capabilities of receiver groups (Perrow, 1967; Daft and McIntosh, 1981).

Unanalyzable (High Equivocality)	**CRAFT TECHNOLOGY** *Information Processing Requirements*: Amount = Low Richness = High *Information Processing Capabilities*: Small amounts of qualitative information - past work experience and observation, occasional face-to-face and group exchanges.	**NONROUTINE TECHNOLOGY** *Information Processing Requirements*: Amount = High Richness = High *Information Processing Capabilities*: Large amounts of primarily qualitative information - frequent face-to-face and group exchanges, unscheduled meetings, also trial and error.
Analyzability (Equivocality)		
Analyzable (Low Equivocality)	**ROUTINE TECHNOLOGY** *Information Processing Requirements*: Amount = Low Richness = Low *Information Processing Capabilities*: Small amounts of clear, often quantitative information - written reports, rules and procedures, schedules, some statistical data	**ENGINEERING TECHNOLOGY** *Information Processing Requirements*: Amount = High Richness = Low *Information Processing Capabilities*: Large amounts of primarily quantitative information - computer data bases, written and technical materials, frequent statistical reports.
	Low Variety (Low Uncertainty)	**Variety** (Uncertainty) High Variety (High Uncertainty)

Figure 1
Information Processing Capabilities

When receiver groups develop their information processing capabilities appropriately, they achieve a "fit" with the requirements of a technology transfer (Drazin and Van de Ven, 1985, Venkatraman, 1989, Gales, Porter and Monsour-Cole, 1992, Keller, 1994). While fit leads to greater levels of technology transfer effectiveness, misfits create inefficiencies that reduce effectiveness. As technology transfer shifts from routine to craft environments, for example, it requires only moderate increases in the amount of rich information. Generating rich information in quantities

greater than required creates inefficiencies due to the expense and time-consuming nature of face-to-face interaction. Similarly, as transfers shift from routine to engineering environments, the appropriate reaction is to increase only the quantity of lean, objective data. Managers can employ resources, planning and incentives to tailor appropriate information processing capabilities thereby influencing project performance. Examples of deployable informational resources might include adequate library access, network and database information, research tools, sufficient time for face-to-face interaction. Project planning might allocate for specific research tasks, deployment of communication infrastructure, budgets for conference and on-site interviews. Incentives might include special recognition for a project's unique problem-solving methodologies or, perhaps, publicized notoriety for exceptional discovery.

Figure 2 (below) shows the expected relationships between a project's information processing requirements and its capabilities, fit, technology transfer effectiveness, and a set of predicted moderating influences. These relationships lead to a multi-variate, multiple contingency fit hypotheses (Drazin and Van de Ven, 1985) and several moderator hypotheses. Effectiveness is a composite of three project-oriented, dependent variables. Prior research tested Schoonhoven's (1981) assumptions of linearity and symmetry in the dataset (see Teasley and Robinson, 1995a). Although some of the assumptions were violated for the present sample, we continued to expect that the fit hypothesis would, in fact, explain a significant variance in the dependent variables.

> *H1:* *For any value of technological variety and analyzability, there is a matched value of information amount and richness that maximizes technology transfer effectiveness. Deviations from that match in any direction will reduce technology transfer's effectiveness.*

Fry (1982) argued that technology is best understood at the group level, and technology transfer groups should experience a broad range of influences both internal and external to their projects. To capture the effects of these influences, a group of moderating variables was measured to account for additional variance in the model. One of the four moderators was drawn from the technology strategy literature and reflected the degree to which project groups were influenced by, and the company's explicit technology policy (Burgelman et al, 1988; Kanter, 1988). The remaining three variables were borrowed from the small group literature and were measures of a project group's a) training, b) interdependent feedback and rewards, and c) managerial support (Campion, Medsker, & Higgs, 1993). As exhibited in Figure 2, these four factors were expected to moderate the relationship between information processing fit and technology transfer effectiveness (Baron and Kenney, 1986 p.1174).

"Technology Policy" is the degree to which technology is emphasized in a company's strategic initiatives and the degree that organizational capabilities are deployed to facilitate creativity, innovation and entrepreneurship. Porter (1985) argued that managers should actively incorporate technology strategies that address which technologies to develop, evaluate choices between technology leadership and follower-ship roles, and actively assess technology licensing,

both inbound and outbound. According to Kantner (1988), technology policy should foster capabilities to explicitly define a technology transfer strategy, actively assess its entrepreneurial talent, break down functional barriers, and elevate innovative projects to the highest priority. Burgelman et al (1988) discussed management's capacity to articulate substantive technology development strategies, to assess the strategic importance of entrepreneurial initiatives, and to define the relatedness of those initiatives to the business unit's core capabilities.

INFORMATION PROCESSING
CAPABILITIES

INFORMATION PROCESSING
REQUIREMENTS

Information
Richness

Analyzability
(Equivocality)

FIT

Information
Amount

Variety
(Uncertainty)

EFFECTIVENESS

Moderators:
Managerial Support
Technology Policy
Training
Interdependent Rewards

Individual
Productivity

Group
Satisfaction

Project
Effectiveness
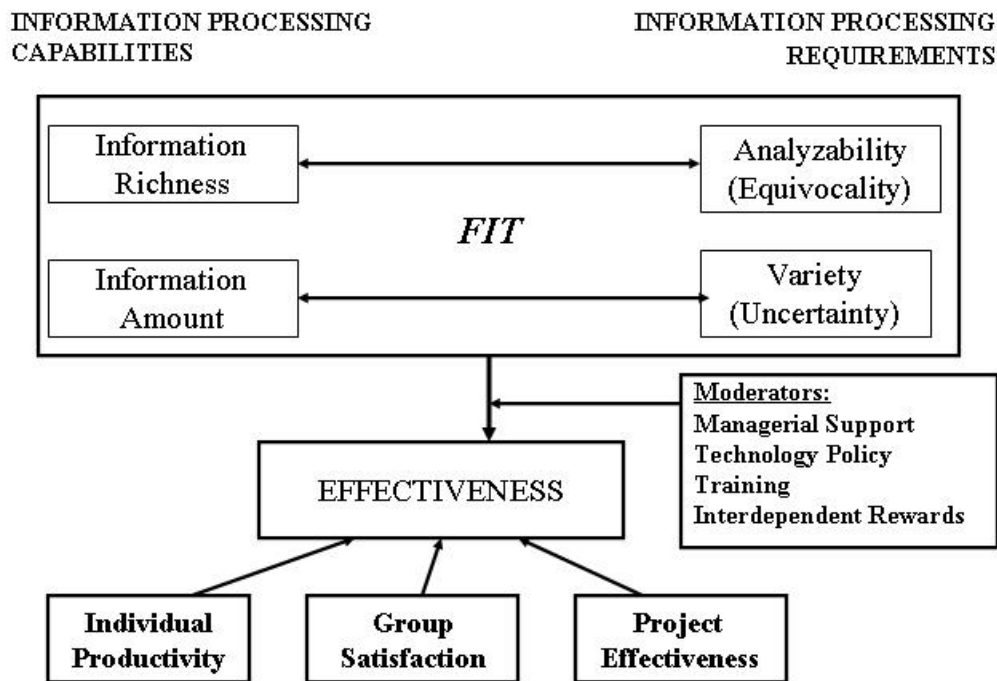
Figure 2

Research has linked technology policy with organizational performance. Aiken and Hage (1971) supported a positive correlation between innovation and the presence of specialization and decentralization, constructs drawn from the Burns and Stalker (1961) model of organic technology policy. Ettlie (1983) found that aggressive technology policy was a predictor of innovation implementation rates. Similarly, Godkin (1988) linked performance with project management capabilities such as planning, scheduling, and control, elevation of science and technology to high levels of visibility, and the implementation of explicit project investment decision criteria. An additional study found a positive moderating effect of overall business strategy on the relationship between technology and firm performance (Zahra and Covin, 1993). This evidence suggests that

to the degree managers enact clearly-defined technology policies, they influence technology transfer and innovation within their entrepreneurial projects.

"Managerial support" is the extent to which employees perceive that their managers support creativity, innovation, and entrepreneurship in their organizations. Managers implement support through the allocation of psychological, physical, financial, human and technological resources. When workers believe their entrepreneurial actions are recognized and explicitly supported by superiors, they are motivated to higher levels of performance. Entrepreneurial projects face more uncertainty than permanent departments regarding resource allocations, yet managers can buffer that uncertainty by accumulating slack resources to underwrite spontaneous innovation (Cyert and March, 1963, Bower, 1970). Slack resources stimulate innovation by making available adequate finances, knowledge, or other supporting factors on an ad-hoc basis. Damanpour (1991) found empirical associations between reported rates of innovation and both the presence of slack resources and the availability of technical knowledge. Kanter (1988) showed that successful innovation projects were those empowered with an abundance of financial, structural and personnel resources.

Other management support studies have linked innovation to slack resources (Aiken and Hage, 1971), availability of personnel to implement innovations (Chakrabarti and Rubenstein, 1976), and team members' perception of available resources (Ancona and Caldwell 1992). Small group studies have reported improved problem solving behavior (Benbasat and Lai-Huat, 1993) and technology transfer effectiveness due to the adequate allocation of group resources (Sen and Rubenstein, 1990). More recent research has validated management support as a primary success factor for project implementation effectiveness (Young and Jordan, 2008), as a significant antecedent to cross-functional product development communication (Song, Montoya-Weiss and Schmidt, 1997), and as a direct influence on the motivation of corporate entrepreneurs (Marvel, Griffin, Hebda and Vojak, 2007). We expect management support to influence technology transfer effectiveness in a positive direction.

"Training" refers to the level of emphasis firms place on instructional interventions designed to enhance innovation or project team processes. Team training programs may be used to focus a group's philosophy, enhance creativity, expand its knowledge, or sharpen decision-making and interpersonal skills. The Campion et al. (1993) work group effectiveness framework related training as one of three characteristics comprising its broad theme of group context. More recent reviews have identified various facets of training emphasized in the psychological research, including cross training (to learn other team member skills), coordination and adaptation (to increase team efficiencies), team self-correction (to effectively diagnostic and problem solve), and the question of team vs individual training (Marks, Sabella, Burke and Zacccaro, 2002; Hollenback, DeRue and Guzzo, 2004; Salas, Nichols and Driskell, 2007).

Campion and colleagues noted that prior empirical evidence to support the value of team training was mixed, methodologies of most studies have been weak, and most studies were focused on process outcomes rather than effectiveness. However, recent work has been more convincing when considering specific types of training interventions. This more contemporary work has specifically

suggested that optimal performance results from coordination and adaptation training strategies as compared to other types of training interventions (Salas et al., 2007, Burke, Steel, Pierce and Kendall, 2006). Thus the most advantageous training should prepare teams to be adaptive to changing demands and alter coordinating mechanisms as needed. From a similar perspective, software development research by Chan, Jiang, and Klein (2008) showed that most advantageous training focuses on team task skills, those that serve the functioning of a team to promote effectiveness and efficiencies. Since project team members are generally chosen for technical proficiency, logic implies that inter-personal, team-building process skills will bear the greatest training value. Training is expected to moderate the fit/effectiveness relationship as noted in the following hypothesis.

"Interdependent feedback and rewards" is the degree to which individual recognition depends upon performance of the individual's entire group. Theory suggests that the more groups are allocated interdependent rewards the more they value cooperation and group productivity over their personal productivity. Such cooperative systems rely on norms of equality and emphasize group accomplishments (Beersma, Hollenbeck, Humphre and Moon, 2003). Technology transfer depends on development tasks that should benefit from commonly-derived project goals and a clearly-defined, unified focus. Indeed, cooperation should strengthen cohesion and foster a common understanding within the entrepreneurial project team that also spills over to outside stakeholders.

Research has linked group effectiveness to clearly-defined goals and interdependent purpose (Guzzo and Shea, 1992; Hackman, 1987), also to the notion of interdependent feedback (Campion et al, 1993). However, as organizations transition from individual- to team-based structures, performance may suffer from an inability to simultaneously shift to appropriate team-based compensation systems (Hackman and Edmindson, 2008). In addition, productive relationships may be complicated by competing factors such as the presence of task interdependence (Wageman and Baker, 1997), task dimension, team composition, and individual performance levels (Beersma et al, 2003). Issues that may moderate team reward effectiveness include communication about the reward systems to employees, workers' involvement in plan design, and perceptions of fairness (McClurg, 2001). Given the Confucian proclivity for cooperation and team-based orientation in Japanese culture, interdependent feedback and rewards should moderate technology transfer effectiveness in a positive direction.

> *H2.* *As managers incorporate greater levels of support for technology transfer teams, the effects of fit on technology transfer's effectiveness will increase in a positive direction.*

> *H3.* *The more explicit a firm's technology policy, the greater it will moderate the effects of fit on technology transfer's effectiveness in a positive direction.*

> *H4.* *The greater the presence of relevant group training, the more it will moderate the effects of fit on technology transfer's effectiveness in a positive direction.*

> *H5.* *The greater the interdependency of feedback and rewards, the more they will moderate the relationship between fit and technology transfer's effectiveness in a positive direction.*

METHODS

The sample consisted of primary data collected directly from project team personnel conducting manufacturing process developments. The project teams were based in Japan and were entrepreneurial within the context of large organizations, were cross-functional in composition, and were supporting manufacturing divisions with the implementation of new technical applications or process technologies. The sample consisted of 81 individuals (n=81 level of analysis) in 27 project teams located in nine large Japanese corporations. The companies corresponded to U.S. SIC categories 371 (motor vehicles and equipment), 362 (electrical industrial apparatus), 379 (miscellaneous transportation equipment), 3569 (general industrial machinery), and 7371 (software programming, systems analysis and design).

Two instruments were utilized to generate the sample: an individual questionnaire and a longitudinal communication log. Individual questionnaires measured each of the moderating variables and the two dependent variables "group satisfaction" and "project effectiveness". Multi-item, Likert-type scales addressed work tasks that had occurred over the entire eight-week period. An additional section was included in the individual questionnaire that collected personal information about the respondents. Individual questionnaire data were collected once at the termination of the eight-week period.

The communication log measured the dependent variable "productivity" and all information processing variables. Communication log data were collected at the individual level at the end of each week for eight weeks to yield approximately 648 information processing scores, which were then aggregated across the eight weeks to generate a total of 81 scores for computational analysis. Respondents recorded data reflecting the amount of information they had processed during the week from each of eight mutually exclusive information sources, with an additional item to control for the usefulness of information from each source. Respondents also recorded a media matrix indicating the level of richness associated with the various information exchanges. Weekly items for the information-processing requirements (technological "variety" and "analyzability") and "productivity" were also included on the communication log in a section of 17 Likert-type scales. Outlying data were identified and subsequent observations deleted. Any missing values were replaced with mean-derived methods.

Both research instruments were prescreened by knowledgeable practitioners to assure face validity of the measures and appropriateness of the collection methodology. Any questionable measures were modified to address reviewer comments. The instruments were then translated from English by a qualified bi-lingual Japanese native. The translated instruments were further refined by a six-person Japanese/English bilingual panel to strengthen their cross-cultural equivalence (Douglas and Craig, 1983; Knight, 1997; Bensaou, Coyne and Venkatraman, 1999). The panel review was a complicated procedure where an item-by-item analysis rated the perceived equivalence between each English and Japanese item-pair. Individual item-pairs were progressively modified through discussion until a full-panel consensus was achieved. This procedure is advocated by Riordan and Vandenberg (1994) who maintained that focus groups more precisely validate conceptual equivalence than the commonly

utilized practice of back-translation. The power of focus groups, claim the authors, is that researchers can flesh out construct meaning from a wide perspective and interactively derive group consensus on an item-by-item translation.   An extensive literature search produced previously reliable and conceptually suitable scales for five of the twelve required variables. New measures or modifications of existing scales were constructed for the seven remaining variables, and all items were assembled to compose the two research instruments. All measurement data were subjected to a systematic screening process before being entered into statistical hypothesis-testing procedures. Screening began with an assessment of distribution normality followed by appraisals of both reliability and construct validity. Variables were considered either intermediate or fundamental depending on their role in the main effects models (regressions that run on fit/effectiveness/moderator hypotheses).   Both the fundamental variables, which were used in the main effect models, and the moderating variables required normal distributions. The distributive constraint was relaxed for the intermediate variables which were those limited to either sample separation (variety and analyzability) or for the mathematical calculation of fit (information amount and information richness). Therefore, normal distributions were required for ten of the 12 variables but ignored for the two information processing requirements variables since they were not directly involved in the correlations of the main effect models.

Measurement standards conformed to the coefficient alpha reliability requirements of Nunally (1978), and to the construct validity requirements suggested by Tabachnick and Fidell (1989). Regarding reliability, Churchill (1979) stated: "For early stages of basic research, Nunally (1967) suggests that reliabilities of .50 to .60 suffice…". However, the generally accepted standard for more applied research is .70 or greater. Because of the exploratory (basic) nature of this research in Japan, and because of potential cross-culture equivalence issues, we felt justified to include several variables with reliabilities between .60 and .70 for a less stringent application of the standard. Assessments of construct validity utilized orthogonally-rotated, principal components factor analyses requiring factor loadings on latent variables of .3 or greater.

Measures of the information processing capabilities, amount and richness, and of fit were objectively derived from discrete values reported for weekly communication patterns, thus no report of their reliability or construct validity is offered. Values for the information requirements, variety and reliability, were measured on four- and five-item conceptual scales taken from Daft and Macintosh (1981). Both constructs demonstrated suitable factor structure and Cronback Alphas of .69 and .61 respectively. Fit was operationalized by a mathematical deviation-score profile analysis and was based on the following formula (Drazin and Van de Ven, 1984; Venkatraman and Prescott, 1990):

$$FIT_{(n)} = (X_{i1} - X_{n1})^2 + (X_{i2} - X_{n2})^2$$

Where $FIT_{(n)}$ = the operationalized fit score for individual n

X_{i1} = the ideal profile score for information amount
X_{n1} = an individual's information amount score

X_{i2} = the ideal profile score for information richness
X_{n2} = an individual's information richness score

To derive fit scores, data were separated into four sub-samples corresponding to the four technological contexts (routine, craft, engineering, non-routine). The separation was divided on the total sample's mean values of analyzability and variety yielding four data subsets approximately equal in size. Within each data subset, ideal profile scores for the information capabilities variables (amount and richness) were then calculated. Ideal profile scores were the mean value for each variable on the 10% of observations scoring highest on the performance criteria "productivity". Once the four profile scores were calculated, fit scores for the remaining 90% of subset observations were computed according to the FIT formula. An observation's fit score was simply its two-dimensional distance from the ideal profile of its subset based on the dimensions of information amount and richness. Once fit scores were calculated, the four data subsets were recombined into a single sample for analysis. The recombined dataset consisted of 567 individual observations that remained after deletion of the 10% pull-out sample used to calculate ideal profile scores.

Technology transfer effectiveness was conceptualized at three criteria levels: individual outcomes, interpersonal process, and organizational outcomes (Campbell et al., 1970). At the individual outcomes level, the variable "productivity" was measured weekly in the communication log. Four self-report items measured the productivity construct, probing the degree to which an individual's quality and quantity of creative ideas and technical solutions were superior to those generated in typical weeks. To reflect interpersonal process, the variable "group satisfaction" was measured once on the individual questionnaire. A three-item composite measured group satisfaction (McGehee and Tullar, 1979). Each item addressed unique aspects of satisfaction: satisfaction with one's own work during the eight-week period, satisfaction with the group's work, and an individual's perception of the entire group's satisfaction. At the organizational outcomes level, "project effectiveness" was measured on the individual questionnaire. Three items composing this measure evaluated how well the projects achieved their work-oriented goals based upon on-schedule work completion, re-work, and conformance to project budget (Keller, 1986). A factor analysis of the three effectiveness variables loaded cleanly on the three factors. Reliabilities for the variables are reported as alpha of .78 for productivity, .89 for group satisfaction, and .63 for project effectiveness. These dependent measures would have benefited from some form of objective corroboration. Such objectivity was impossible to achieve due to proprietary reservations of participating companies, and due to the author's limited access to company documentation.

Moderating variables were each measured with seven-point Likert-type scales on the individual questionnaire. Items for the managerial support and technology policy constructs were taken from existing scales in the technology and small group literatures (Leonard-Barton and Deschamp, 1988; Bushe and Johnson, 1989; Burgelman, et al, 1988; Ettlie, 1983). Factor analysis demonstrated adequate construct validity for management support. However, factor structure for technology policy was less than ideal, even after the attempts of various rotational remedies.

Reliabilities for the managerial support and technology policy were .78 and .65 respectively. Items for both the training and interdependent feedback and rewards measures were taken directly from Campion, Medsker and Higgs (1993) with one of the training items rephrased to reflect technology training environments. Both constructs exhibited adequate factor structures and corresponding reliabilities of .70 and .61.

RESULTS

Hypotheses were tested with correlation analysis. The zero-order correlation matrix is shown below. Tabachnick and Fidell (1989) warn against the multicollinearity of variables with bi-variate correlations above .70 in the same correlation analysis. The only variables breaching this condition are the information amount and information richness variables. Since these variables were ratio measures and were only utilized for calculation of system fit scores, their high correlation was not a significant cause for concern. All other variables exhibited bi-variate structure suitable for correlation analysis and, therefore, adequate for hypothesis testing.

ZERO ORDER CORRELATION MATRIX

	MEAN	STD DEV	PROJ SIZE	VARIETY	ANALYZ	AMOUNT	RICH	FIT	MAN SUP	TECH POL	TRAIN	FEED	PROD	SATIS	PROJ EFFECT
PROJ SIZE	3.000	0.669	1.000												
VARIETY	16.749	3.677	-0.124	1.000											
ANALYZ	19.229	3.772	0.139	-0.116	1.000										
AMOUNT	17.504	10.392	-0.222	0.199	-0.105	1.000									
RICHNESS	45.998	23.611	-0.196	0.222	-0.005	0.722	1.000								
FIT	3.455	0.061	0.201	0.006	0.061	-0.282	-0.309	1.000							
MAN SUP	16.000	3.762	-0.077	0.082	0.099	0.041	0.095	-0.001	1.000						
TECH POL	12.493	2.955	-0.086	0.082	0.110	0.090	0.075	0.123	0.508	1.000					
TRAINING	11.738	2.949	-0.012	0.065	0.232	-0.020	0.073	0.124	0.550	0.451	1.000				
FEEDBACK	12.976	2.998	-0.348	0.062	-0.015	0.112	0.152	0.051	0.341	0.340	0.241	1.000			
PROD	19.575	2.656	-0.028	0.404	0.081	0.158	0.172	0.166	0.171	0.152	0.197	0.203	1.000		
SATIS	9.633	2.459	-0.010	0.189	0.115	0.068	0.106	0.028	0.302	0.301	0.210	0.170	0.371	1.000	
PROJ EFFECT	20.323	5.036	-0.162	0.154	-0.022	0.204	0.190	-0.179	0.127	0.039	-0.078	0.151	0.112	0.250	1.000

$* p < .10$ $** p < .05$ $*** p < .01$

The fit hypothesis was tested separately for each of the dependent variables productivity, group satisfaction, and project effectiveness. A systems approach was utilized that measured fit as a deviation from its ideal profile: the greater an observation's deviation, the less effectively it should perform (Drazin and Van de Ven, 1985). The systems approach allows researchers to assess the effects of multiple contingencies simultaneously. The fit hypothesis was tested in a series of six regression models. For each of the three dependent variables, a control model and a main effect model were run. The three control models simply evaluated explained variance of the selected

control variable, project size. Main effect models then added fit as a second independent variable allowing the measurement of fit's partial correlation, or additional variance explained.

Fit scores and productivity were recorded weekly for all individual observations in the working sample. The dependent variables satisfaction and project effectiveness were recorded only once at termination of the eight-week period. To compensate the measurement differences, fit and productivity were aggregated across the eight weeks to yield single, mean values for each individual for the eight-week period. Satisfaction and project effectiveness were group-level phenomena measured at termination of the period. Therefore, an individual's score on each variable was replaced with the mean score of his entire project group. This process yielded 81 observations for fit and 81 observations for each of the three dependent variables. Every individual was scored uniquely on productivity and individuals within the same project all shared identical scores on satisfaction and project effectiveness.

Fit was tested on each dependent variable with a pair of regression models. The control model for productivity indicated a non-significant coefficient for project size, explaining .08% of variance. Addition of fit to the model produced a significant main effect, evidencing a 4.215 (p<.01) regression coefficient, explaining additional productivity variance of 3.05%. The satisfaction models were non-significant for both the control and fit associations, and fit explained only .10% of the criterion variance. The project effectiveness control model was significant for project size, explaining 2.625% of variance. Addition of the fit variable produced a significant effect with the dependent variable although the effect was in a negative direction, thereby failing to confirm the hypothesis for productivity. Results of the fit tests are exhibited as Table 1.

TABLE 1: REGRESSION ANALYSIS
Fit Hypothesis

Standardized Regression Coefficients and Significance Tests for:
n=81 Individuals, 567 Observations

DEPENDENT VARIABLE	COMPANY	PROJECT	INDIVIDUAL	FIT	R^2	Delta R^2	F
PRODUCTIVITY:							
Model 1	-0.5980*	0.1645	-0.1014		0.0169		3.226**
Model 2	-0.5061	0.1291	-0.1510*	-0.5551***	0.0253	0.0084	4.667***
SATISFACTION:							
Model 1	-1.1018***	0.3273***	-0.0400		0.0381		7.443***
Model 2	-1.0832***	0.3202***	-0.0503	-0.1123	0.0389	0.0008	5.683***
PROJECT EFFECTIVENESS:							
Model 1	-4.2746***	1.4468***	-0.5135***		0.1120		23.669***
Model 2	-4.5316	1.5457	-0.3747	1.5521***	0.1453	0.0333	23.890***
	p<.10 *	p,<.05**	p<.001***				

Test findings for the hypotheses are displayed in Table 2. Moderator hypotheses were tested with a moderated regression analysis (Sharma, Durand & Gur-arie, 1981). This approach required the addition of multiplicative interaction terms for each moderator within a system of regression equations. Interaction terms were the product of an observation's fit score and its score for the hypothesized moderator. Statistically significant interaction terms reflect the degree to which moderating effects are present in the system (Slater & Narver, 1994). Interaction terms were entered individually into the set of dependent variable, main effect fit models. A total of twelve interactive effect models assessed the four moderator hypotheses. Semi-partial correlations for each moderator could then be evaluated separately for its variance added to each of the three dependent variables.

TABLE 2
Standardized Regression Coefficients and Significance Tests

DEPENDENT VARIABLE	COMPANY	PROJECT	INDIVIDUAL	FIT	Managerial Support	Tech Policy	Training	Interdep Rewards	R^2	Delta R	F
PRODUCTIVITY											
Model 1	-0.5980	0.1645	-0.1014						0.0169		.0223*
Model 2	-0.5061	0.1291	-0.1510	-0.5551					0.0253	0.0084	0.0010
Model 3	-0.4862	0.1436	0.1195	0.0508	0.0367				0.0620	0.0367	
Model 4	-0.4382	0.1084	-0.1201	-0.0186		0.0377			0.0538	0.0285	
Model 5	-0.0564	0.1613	-0.1311	0.1264			0.0537		0.0680	0.0427	
Model 6	-0.3913	0.0672	0.0446	0.4676				0.0748	0.0962	0.0709	
SATISFACTION											
Model 1	-1.1018	0.3274	-0.0400						0.0381		0.0001
Model 2	-1.0832	0.3202	-0.0503	-0.1123					0.0389	0.0008	0.0002
Model 3	-1.0544	0.3412	-0.0049	0.7623	0.0530				0.1114	0.0725	
Model 4	-0.9540	0.2809	0.0085	0.9093		0.0718			0.1303	0.0914	
Model 5	-1.1412	0.3524	-0.0304	0.5687			0.0503		0.0806	0.0417	
Model 6	-0.9925	0.2713	0.1043	0.6960				0.0592	0.0856	0.0467	
PROJECT EFFECTIVENESS											
Model 1	-4.2746	1.4468	-0.5135						0.1120		0.0001
Model 2	-4.5316	1.5457	-0.3747	1.5521					0.1453	0.0333	0.0001
Model 3	-4.4798	1.5834	-0.2929	3.1267	0.0954				0.2013	0.0560	
Model 4	-4.3505	1.4906	-0.2923	2.9839		0.1006			0.1881	0.0428	
Model 5	-4.5852	1.5755	-0.3563	2.1816			0.0465		0.1538	0.0085	
Model 6	-4.4034	1.4766	-0.1563	2.9421				0.0836	0.1675	0.0222	0.0001

p<.10 *   p,<.05**   p<.001***

Managerial support was first entered into the regression equations. Managerial support demonstrated a significant moderating effect on each of the three fit/effectiveness relationships. Regression coefficients of the interaction term were 4.152 for the productivity model, 7.300 for satisfaction, and 3.042 for project effectiveness. In each case, the effects were significant at the level of $p<.01$. In addition, the managerial support interaction explained additional variance ranging from 2.9% for productivity, to 8.6% satisfaction, and 1.5% for project effectiveness. The strength of these results provides ample support for the hypothesized relationship of managerial support.

Technology policy demonstrated regression coefficients of 3.060, 7.885 and 1.5680 respectively for productivity, satisfaction, and project effectiveness. Productivity and satisfaction were significant at $p<.01$ and the additional variance explained by technology policy was 1.58% for

productivity and 9.9% for satisfaction. The β term was non-significant for project effectiveness, explaining less than 1% of its variance. These results yielded only marginal support for hypothesis 4 concerning the moderating effects of technology policy on transfer effectiveness.

The training models produced positive interaction term β's of 4.389 for productivity and 5.232 for satisfaction. Both coefficients were significant at the p<.01 level. In the project effectiveness model, the training coefficient was negative and non-significant. The training effect explained additional variance of 3.2% for productivity, 4.6% for satisfaction, but less than 1% for project effectiveness. Like technology policy, training was supported in only two of its three component hypotheses, producing weak support for the hypothesis 5.

Analysis of the fourth moderator, interactive feedback and rewards, provided uniform support for its hypothesis. *b* coefficients for the interactive terms were 4.678, 4.590, and 3.803 for productivity, satisfaction and project effectiveness respectively. All three coefficients were significant at the p<.01 level. Interdependent feedback and rewards explained additional variance in each of the three models: 3.6% for productivity, 2.5% for satisfaction, and 2.4% for project effectiveness. Based on this evidence, hypothesis 6 was fully supported, and a summary of all the hypothesis results are displayed below.

Hypothesis	Test	Result	Meaning
1a. Fit between technology context and information structure maximizes productivity.	Regression	Supported	Fit β significant and positive for productivity. Variance explained.
1b. Fit between technology context and information structure maximizes satisfaction.	Regression	Not Supported	Fit β non-significant for productivity.
1c. Fit between technology context and information structure maximizes project effectiveness.	Regression	Not Supported	Fit β significant but negative for productivity: wrong direction.
2a. Managerial support moderates the relationship between fit and productivity.	Moderated regression	Supported	MS β significant and positive for productivity. Variance explained.
2b. Managerial support moderates the relationship between fit and satisfaction.	Moderated regression	Supported	MS β significant and positive for satisfaction. Variance explained.
2c. Managerial support moderates the relationship between fit and project effectiveness.	Moderated regression	Supported	MS β significant and positive for proj effectiveness. Variance explained.
3a. Technology policy moderates the relationship between fit and productivity.	Moderated regression	Supported	TP β significant and positive for productivity. Variance explained.
3b. Technology policy moderates the relationship between fit and satisfaction	Moderated regression	Supported	TP β significant and positive for satisfaction. Variance explained.
3c. Technology policy moderates the relationship between fit and project effectiveness.	Moderated regression	Not Supported	TP β non-significant for proj effectiveness.
4a. Training positively moderates the relationship between fit and productivity.	Moderated regression	Supported	Tr β significant and positive for productivity. Variance explained.
4b. Training moderates the relationship between fit and satisfaction.	Moderated regression	Supported	Tr β significant and positive for satisfaction. Variance explained.
4c. Training moderates the relationship between fit and project effectiveness.	Moderated regression	Not Supported	Tr β non-significant for proj effectiveness.
5a. Interdependent feedback moderates the relationship between fit and productivity.	Moderated regression	Supported	IF β significant and positive for productivity. Variance explained.
5b. Interdependent feedback moderates the relationship between fit and satisfaction.	Moderated regression	Supported	IF β significant and positive for satisfaction. Variance explained.
5c. Interdependent feedback moderates the relationship between fit and project effectiveness.	Moderated regression	Supported	IF β significant and positive for proj effectiveness. Variance explained.

Table 3, Hypotheses Conclusions

DISCUSSION

Findings were less supportive than anticipated. Prior research (Teasley and Robinson, 1995b) identified a breach of Schoonhoven's (1981) contingency assumptions in the data, which might have weakened precision for testing the fit hypotheses. Other methodological or cultural problems may have influenced the results as well. Distribution of the information variables was non-normal and bimodal, which challenged a necessary condition for the testing used in the prior study (Teasley and Robinson, 2005), and may have extended into the multiple fit tests conducted in the present analysis. However independent distribution of the fit variable itself demonstrated normality, limiting the distributive concerns of its relationships.

Cultural concerns include potential sample response bias related to the collectivist psychological or behavioral attributes of the Japanese sample (Churchill, 1991). Common to Japanese work behavior is the preference to honor group norms over the pursuit of individualism (Hofstede, 1980). This trait dictates that one does not "stick out" relative to the activities of his or her group. Several variety and analyzability items probe how "different" work was during the week, or how much respondents had to "search for solutions". Such items might bias the sample should respondents perceive that the accomplishment of non-routine, unfamiliar or difficult work might differentiate them from their groups. Such bias, if pervasive in the data, might threaten precision of the statistical findings.

The systems fit hypothesis predicted that fit- achieving projects would enjoy superior performance. While the data supported that notion for the productivity variable, it failed to do so for either satisfaction or project effectiveness. The findings may have been complicated by mixed levels of analysis that were employed in the systems fit tests (Allison, 1978; Fry, 1982; Rousseau, 1985). Fit and productivity were each collected at the weekly level, aggregated to eight-week mean values, and then tested as individual-level phenomena. Satisfaction and project effectiveness were each recorded as group level phenomena and then disaggregated to the individual level. Fry (1982) demonstrated within contingency research the confounding effects that often result from mixing analytical levels within single studies. Indeed, the only dependent variable yielding favorable results was productivity, which was measured at the same individual level as the independent variable fit. A related limitation mentioned previously was the author's inability to objectively corroborate the dependent measures.

Longitudinal factors could also have disturbed the analysis. Productivity was reported weekly, while both satisfaction and project effectiveness were reported only once at termination of the eight week period. The latter could be distorted by random influences operating late in the period. Although scale items were worded to specifically address the entire period, a late-stage occurrence could disproportionately bias a respondent's recollection. A respondent's satisfaction, for example, might be more influenced by an action that occurred in week eight than in week one. A single incident could put a project out of budget during week eight and create low project

effectiveness scores, even if the project had been in budget during the other seven weeks. Either situation might reduce the integrity of the dependent variables.

IMPLICATIONS

This study poses implications for scholarly work on innovation and technology management. It also provides useful findings for the community of practitioners that struggle with the increasingly competitive environments of international business. Implications are noted in three areas of scholarly and practical interest. The first emphasizes the important dimension of human resources in developing innovative capabilities. A second reflects lessons to be learned from the competitive practices of Japanese technology transfer. Finally, we discuss the implications of project performance and its relationship with effective innovativeness in organizations.

The intensity of today's global competition pressures organizations to accumulate capabilities that are both innovative and dynamic (Teece, Pisano and Shuen, 1997; Eisenhardt and Martin, 2000). We have suggested technology transfer as one form of capability that is dynamic across a range of innovative applications. Our work has demonstrated that project teams constitute an essential form of human resources to fuel and sustain technology transfer as an innovative capability. As shown here, organization behavior aids our understanding of mobilizing these human resources. While advanced societies emphasize science and technology as necessary ingredients for advancing their "knowledge" economies, this study demonstrates that an additional, less-cited ingredient is the human contribution to harness this knowledge for productive outcomes (Kozolowsky and Bell, 2003). We encourage future studies of technology and innovation management to incorporate the valuable lessons of organization and human psychology.

Japan presently enjoys the world's second largest economy, much of its recent growth based on a leadership position in technology and innovation. National surveys of R&D labs in the US and Japan indicate that R&D knowledge flows and spillovers are greater in Japan (Cohen, Goto, Nagata, Nelson and Walsh, 2002). This is likely due, among other things, to its emphasis on international technology deployment and on its unique style of collectivist project management (Clark, Fujimoto, 1989). Japan firms continue to innovate through a national collaborative system of research consortia, pooling assets, risk and intellectual contributions (Wen and Kobayashi, 2001). Research documents a high diffusion of innovative Japanese organizational routines and management practices (i.e. capabilities) to Western firms (Massini, Lewin, Numagami, Pettigrew (2002). The present study discloses a fine-grained analysis of Japanese communication and human resource practices as innovative capabilities. At this level of detail, organizational processes are the most transparent, yielding complex understanding of the innovative phenomena. We encourage additional project-level studies of leading Japanese firms that possess excellent skill sets for creating and deploying innovative capabilities.

This study produced unique perspectives on technology transfer effectiveness utilizing multiple criteria of project effectiveness, satisfaction and productivity. While project effectiveness reflects well-established criteria in the literature, its application in technology transfer research settings is less prominent. There should be continued investigation into the role of projects for creating effective organizational capabilities. The body of project management knowledge is so well established as an American ANSI/PMI 99-001-2004 standard that it poses a wealth of research opportunities to better understand the temporary nature of development work (Project Management Institute, 2004).

Satisfaction was a criterion to assess the overall fulfillment of human expectations for the technology transfer work. We should recognize it's important since it constitutes a broad measure of subjective variance related to the project work. Projects function best when trust and cooperation can thrive in an atmosphere of interdependency. Our data suggest that interdependency does in fact nurture satisfaction that will hopefully yield a more sustainable form of innovation. We suggest further research into this idea to uncover other human factors that breed the spirit of creativity and entrepreneurship in organizations.

Finally, productivity provided a granular indicator of innovation on a project-level, weekly basis. Instead of viewing innovation at the more complicated level of patent or article productivity, this perspective captures activity as it occurs so it can be attributed to its immediate antecedents. Instead of creating separation between the inputs and outcomes of innovation, it attempts to achieve more immediate linkages. We hope these factors will contribute to a growing understanding of technology transfer effectiveness within the literature.

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TURKEY'S ECONOMIC INTEGRATION WITH THE EU: AN EVALUATION OF CURRENT STATUS AND FUTURE PROGNOSIS

Askar H. Choudhury, Illinois State University
G. N. Naidu, Illinois State University

ABSTRACT

In this paper, we study Turkey's current and future economic conditions and shade some prospects into the prognosis of its probable European Union (EU) membership. Turkey's most recent effort to enter the European Union has been denied on the ground of not achieving union's standard on various aspects. Turkey's socio-political standing is so unique that it offers a very interesting model for economic integration. Turkey's drive to join the union has faced numerous challenges over the years. Primary inspiration for European Union integration transpires from the idea of creating a single market for goods, services, and capital among the union members. Since this is the intention of EU integration, we have evaluated Turkey on the basis of their economic profile for integration into the union and investigated a prognosis for future prospect by analyzing the similarity of their economy with that of eleven other longstanding European Union (EU) member countries. Multivariate analyses of Mahalanobis squared distance, canonical correlation, and canonical discriminant analysis show that currently Turkey do not have similar economic status nor the prognosis in near future for them to be a member of the union on the basis of economic profile that we have considered in this paper. Given that, Greece is also drifting apart in the future from rest of the union member countries and can be classified as a separate group provides an opportunity in Turkey's favor. Therefore, Turkey would like to place a considerable emphasis on their long-term economic stabilization in a cohesive manner by implementing necessary policy modifications and win their spot in the union.

INTRODUCTION

Socio-political standing of Turkey is so unique that it offers a very unique and interesting model for European Union integration. Its desire to enter Single Market Europe was intensified in recent years with the enlargement of the European Union. Turkey has been seeking to become a member of the European Union (EU) for nearly four decades. Most likely, Turkey's integration with the EU will remove the distortions in their price system, which in turn will boost the efficiency of their economy. This economic efficiency will make the country a better place for foreign direct investment. Thus, the efficiency gains from integration will be boosted by induced capital formation.

However, Turkey's most recent effort to enter the EU in 2002 has been denied by the EU. Although, countries such as Poland, Hungary, Czech Republic, Greece, Cypress, Slovenia, Malta, and many others entered the EU in May of 2004. Bulgaria and Romania also got admitted to EU effective January 1, 2007, while Turkey still remains outside. Therefore, it will be beneficial to study the future prognosis of Turkey's economy using forecasted data on economic factors. Turkey has been a very faithful and loyal NATO member. During World War II, Turkey remained neutral until February 1945, when it joined the Allies. During the Cold War, Turkey allied itself with the western world. Turkey's long standing economic relationship with the western world is undeniable. Its capital city is located in Europe. In 1963, European Community signed an association agreement with Turkey that envisioned the mutual lowering of trade and migration barriers. In 1973, a protocol addendum was signed and a joint commission was established for removing migration barriers between the EC and Turkey by 1986. But, no advancement has been made to lower the trade and migration barriers until 1982 due to a military coup that took place in 1980. As a result, the EC suspended its relations with Turkey. In spite of all these negative developments, Turkey applied for EU membership in 1987 and it was rejected by the EU. Latest attempt by Turkey to join the union was blocked at the Copenhagen Summit in December of 2002. However, EU pledged Turkey that if it carries out certain criteria on human rights and democracy by December 2004, accession talks could begin soon. The basic motivation for European integration is to establish a single market for goods, services, and capital among the member nations of the EU. Since this is the premise on which the EU expansion drive is advanced, Turkey should then be examined on the economic dimensions of integration (Naidu and Choudhury, 2005). Other researchers also studied various dimensions of Turkey's country profiles (see, Lejour and de Mooij, 2005; Tausch, 2003; Harrison, Rutherford, and Tarr, 1997) for EU integration.

The real issue is that European integration and enlargement does not have the same geopolitical meaning for all of its member countries. Therefore, there is no certainty among the current EU members to accept Turkey in the union. The grounds for this disagreement are numerous. Former French president Valery Giscard d'Estaing the architect of EU constitution, objected to Turkish membership because of its "different culture, different approach, and different way of life." Blocking Turkey from entering the EU contradicts the Union's motto: "Unity in diversity." Resistance for Turkey's entry into the union comes from many directions. Turkey's cultural identity (Islam), social structures (for example, the strong role of military), and demography (projected to be the EU's most populated country in ten years) is perceived to be fundamentally disruptive for a consistent European union. At the center of this issue lies the concern about the continuing disharmony among Turks as to the cultural and social structure of their society. There were several events of social and cultural disharmonies between these two factions occurred time to time. Turkey was shaped by the ideology of Kemalism, after Mustafa Kemal Atatürk. Atatürk implemented a series of reforms that modernized the country and moved it more towards European culture. Turkey adopted a strict separation of state and religion. State strictly controls the practice

of religion. However, Crack between Kemalists and Islamists continues to live and occasionally come up on the surface. According to Kemalists' Turkish society should respect secularism as practiced by their European neighbors. While the majority of Islamists interpretation of secularism is religious freedom. EU is also concerned about how Turkey deals with their minority groups in the society. Law enforcement institutions are primarily dominated by the Kemalists, while the Islamists dominate the military ranks and parliament. Despite of the appearance of these social disharmonies, Turkey upholds the basic principles of secularism and democracy.

The proponents of Turkey's membership argue that it is a key regional power with a large economy and the second largest military force of NATO that will enhance the EU's position as a global player. Turkey ranks as the seventh largest economy in the Council of Europe and 15th largest economy in the world. It is one of the G-20 industrial nations. Turkey is a founding member of OECD. Turkey's GDP growth rate averaged 7.4% annually between 2002 and 2007. In the near past, Turkey's economic trends were considerably improving. However, at present, Turkey's economy is turning towards the negative. World Bank forecast a 5.4% rate of growth in 2008 and slightly higher growth rate for 2009. Consumer inflation is running at a rate of 9% for 2008, which is higher than most of the countries in Europe. It has an ongoing negative balance in Current Account with an unemployment rate of about 10%. Turkey's budget (deficit) balance as % of GDP is about 3% and continues to rise. Foreign direct investment is falling and the value of its currency is declining. Inflation and unemployment rate remain problematic for the economy. Interest rate seems to be rising at the same time. Thus, this paper examines the integration issue of Turkey on the basis of its past and future (forecasted) economic profiles. The purpose of this paper is to compare Turkey's current and future economic profiles and observe if they are converging or diverging into the future. It is even more important for us to observe if Turkey's future economic profile will converge to those of longstanding EU member countries economic profiles to make the EU integration likely.

DATA AND ECONOMIC FACTORS

The objective of this paper is to employ economic factors to identify economic integration for the union by grouping countries together on the basis of economic similarities. Both past (2002-2006) and future (forecasted data for 2008-2012 from "The Economist") data were analyzed separately to evaluate the current situation and assess the future prognosis. Classification of groups of countries would depend on the cohesiveness of their economic profiles. Economic profile is created and evaluated for each country using the following four economic factors: 1) GDP Growth Rate, 2) Current Account Balance (% of GDP), 3) Inflation Rate, and 4) Interest Rate. Data set were collected from "The Economist" and "OECD" for this research purpose. Annual data of these twelve countries for four different economic factors were obtained and analyzed. Summary statistics for

these data were reported in Table 1 for the period of 2002-2006 (past) and 2008-2012 (future). Results of multivariate analyses are reported in Table 2, Table 3, and Table 4.

TABLE1: Summary Statistics:2002-2006 and 2008-2012.					
Variable	Country	Mean 2002-2006	Mean 2008-2012	Std Dev 2002-2006	Std Dev 2008-2012
GDP Growth	Austria	1.9000000	2.0400000	0.9137833	0.2073644
Curr-Balance		0.9016000	3.2600000	1.5426812	0.3646917
Inflation		1.7800000	2.0200000	0.3898718	0.3834058
Interest Rate		4.0910002	4.1000000	0.5824679	0.0707107
GDP Growth	Belgium	1.9200000	1.8000000	0.9121403	0.2121320
Curr-Balance		3.3600000	0.5200000	1.0734757	0.1303840
Inflation		1.9800000	2.0400000	0.5019960	0.7368853
Interest Rate		4.0541666	4.1000000	0.5586389	0.0707107
GDP Growth	France	1.8200000	1.8800000	0.4764452	0.2387467
Curr-Balance		-0.4522000	-1.2400000	1.0370796	0.2073644
Inflation		1.8200000	1.8800000	0.2683282	0.3492850
Interest Rate		4.0595000	4.1000000	0.5336601	0.0707107
GDP Growth	Germany	1.4600000	2.3000000	1.3164346	0.2738613
Curr-Balance		4.3140000	2.9000000	1.4479744	0.7842194
Inflation		1.7000000	1.8600000	0.3674235	0.3577709
Interest Rate		4.0011666	4.1000000	0.5227919	0.0707107
GDP Growth	Netherlands	1.8800000	2.2000000	1.0329569	0.1581139
Curr-Balance		7.5920000	5.2800000	1.2475857	0.4207137
Inflation		1.5800000	1.8200000	0.4207137	0.2387467
Interest Rate		4.0526666	4.1000000	0.5572630	0.0707107
GDP Growth	Ireland	5.0000000	3.0400000	0.7615773	0.6949820
Curr-Balance		-2.6800000	-3.1400000	2.2603318	0.5029911
Inflation		3.3400000	2.4800000	1.0454664	0.4381780
Interest Rate		4.0568332	4.1000000	0.6091289	0.0707107
GDP Growth	Italy	0.7000000	1.2200000	0.7582875	0.4658326
Curr-Balance		-1.4160000	-2.5400000	0.7108657	0.1516575
Inflation		2.3000000	2.0800000	0.2915476	0.5540758
Interest Rate		4.2380478	4.1800000	0.5339420	0.2387467
GDP Growth	Finland	3.1000000	2.6800000	1.4747881	0.1788854
Curr-Balance		6.1740000	3.0400000	3.5858444	0.5366563
Inflation		1.0200000	2.2600000	0.5932959	0.4827007
Interest Rate		4.0716668	4.1000000	0.5990036	0.0707107

TABLE1: Summary Statistics:2002-2006 and 2008-2012.					
Variable	Country	Mean 2002-2006	Mean 2008-2012	Std Dev 2002-2006	Std Dev 2008-2012
GDP Growth Curr-Balance Inflation Interest Rate	Portugal	0.6400000 -8.2060000 2.9400000 4.1366502	1.8800000 -7.1200000 2.2800000 4.1000000	0.8234076 1.4317577 0.5683309 0.5692919	0.3114482 0.9576012 0.0836660 0.0707107
GDP Growth Curr-Balance Inflation Interest Rate	Greece	4.3000000 -6.4240000 3.3600000 4.2601666	3.0000000 -9.6200000 2.8000000 10.6800000	0.5099020 1.8531676 0.3049590 0.5558113	0.2549510 1.4669697 0.6363961 0.1095445
GDP Growth Curr-Balance Inflation Interest Rate	Spain	3.4400000 -6.7100000 3.0600000 4.0716834	1.8000000 -5.1400000 2.7000000 4.1000000	0.3130495 2.2928476 0.4335897 0.5795121	0.8306624 1.0502381 0.8124038 0.0707107
GDP_Rate CB_P_GDP INF IntRate	Turkey	6.6800000 -5.9720000 13.0000000 31.0600000	4.5200000 -5.9600000 6.1200000 13.8600000	1.4788509 1.7914017 6.9274815 18.2283570	0.8584870 0.3974921 2.4783059 2.5145576

RESEARCH METHODOLOGIES

We have carried out statistical analysis in two steps. First, we compare Turkey's past and future economic profiles with respect to other seasoned union member countries past and future economic profiles. This was done by applying univariate tests on means to see if Turkey's economic profile is parallel or divergent to the economic profiles of other nations, as well as on its own past and future time domains. In similar fashion, we also analyzed pair-wise correlations (not reported in the paper) between countries' economic factors to observe the proximity of countries' economic profiles. Second, proximity of these countries economy on a multidimensional scale was also tested using Mahalanobis squared distance D2 for both past and future time domains. Mahalanobis D2 or Hotelling's T2 may be used to observe the convergence/divergence between countries and also between past and future time domains based on four economic factors collectively; namely Growth Rate of GDP, Current Account Balance (% of GDP), Inflation, and Interest Rate. Canonical discriminant analysis was then used to group similar countries together based on economic profiles for both past and future time domains.

Country	AU	BE	FI	FR	GE	GR	HO	IR	IT	PO	SP	TU
AU	0	2.11997	10.68059	0.60673	4.02929	26.70670	14.70313	19.27507	3.33552	28.97209	22.95647	89.03946
BE	2.11997	0	4.30944	4.94622	0.63405	39.23423	5.88088	25.34656	9.28635	45.66528	36.32294	104.6546
FI	10.68059	4.30944	0	16.15136	4.02794	56.89549	2.33775	34.72302	25.19277	74.46353	56.19359	122.0362
FR	0.60673	4.94622	16.15136	0	7.58554	21.44127	21.24550	17.51349	1.66593	21.32783	17.24937	82.18638
GE	4.02929	0.63405	4.02794	7.58554	0	49.22816	3.73023	33.98282	11.48023	52.19834	45.31793	119.2871
GR	26.70670	39.23423	56.89549	21.44127	49.22816	0	72.81678	5.40300	24.97737	17.60809	1.05542	34.56721
HO	14.70313	5.88088	2.33775	21.24550	3.73023	72.81678	0	48.69153	28.25363	83.46459	70.43894	145.5522
IR	19.27507	25.34656	34.72302	17.51349	33.98282	5.40300	48.69153	0	25.13067	34.34597	8.87974	41.88836
IT	3.33552	9.28635	25.19277	1.66593	11.48023	24.97737	28.25363	25.13067	0	15.09294	18.60386	89.19872
PO	28.97209	45.66528	74.46353	21.32783	52.19834	17.60809	83.46459	34.34597	15.09294	0	10.15134	70.91952
SP	22.95647	36.32294	56.19359	17.24937	45.31793	1.05542	70.43894	8.87974	18.60386	10.15134	0	40.88100
TU	89.03946	104.6546	122.0362	82.18638	119.2871	34.56721	145.5522	41.88836	89.19872	70.91952	40.88100	0

TABLE 2A: Mahalanobis Squared Distance- D^2: 2002-2006.

Country	AU	BE	FI	FR	GE	GR	HO	IR	IT	PO	SP	TU
AU	0	18.23868	6.99229	52.47692	1.26885	810.5921	9.51945	142.8366	80.97743	276.5062	175.4577	820.0482
BE	18.23868	0	21.09592	9.08071	12.83003	624.9169	53.77803	72.25595	22.88611	154.7491	83.17644	681.9262
FI	6.99229	21.09592	0	50.05945	4.00230	773.4990	21.46245	109.1610	84.76587	253.0695	155.7006	747.1069
FR	52.47692	9.08071	50.05945	0	41.44323	504.3600	106.0583	39.53157	5.52379	89.69920	39.28510	586.0546
GE	1.26885	12.83003	4.00230	41.44323	0	758.2726	15.79728	119.6882	69.75342	248.2435	153.4792	765.0012
GR	810.5921	624.9169	773.4990	504.3600	758.2726	0	961.4358	403.3401	473.1758	278.4119	363.9119	113.4457
HO	9.51945	53.77803	21.46245	106.0583	15.79728	961.4358	0	220.0891	144.1831	387.9543	266.3654	942.5775
IR	142.8366	72.25595	109.1610	39.53157	119.6882	403.3401	220.0891	0	50.33138	45.42917	17.36845	434.7996
IT	80.97743	22.88611	84.76587	5.52379	69.75342	473.1758	144.1831	50.33138	0	70.42982	30.78997	597.9401
PO	276.5062	154.7491	253.0695	89.69920	248.2435	278.4119	387.9543	45.42917	70.42982	0	12.69909	425.7073
SP	175.4577	83.17644	155.7006	39.28510	153.4792	363.9119	266.3654	17.36845	30.78997	12.69909	0	475.2811
TU	820.0482	681.9262	747.1069	586.0546	765.0012	113.4457	942.5775	434.7996	597.9401	425.7073	475.2811	0

TABLE 2B: Mahalanobis Squared Distance- D^2: 2008-2012.

Note: AU=Austria, BE=Belgium, BU=Bulgaria, FI=Finland, FR=France, GE=Germany, GR=Greece
HO=Netherlands, IR=Ireland, IT=Italy, PO=Portugal, SP=Spain, TU=Turkey.

If, we consider $\mathbf{x}_{i1}, \mathbf{x}_{i2}, \ldots\ldots, \mathbf{x}_{iNi}$ random samples from two multivariate normal populations, $\mathbf{N}_p$ (μ_i, Σ_i) for i=1,2. Then, the test statistic Hotelling's T^2 to test the difference between two mean vectors can be defined as,

$$T^2 = \frac{N_1 N_2}{N_1 + N_2}(\hat{\mu}_1 - \hat{\mu}_2)'\hat{\Sigma}^{-1}(\hat{\mu}_1 - \hat{\mu}_2) \text{ and } \hat{\Sigma} = \frac{(N_1 - 1)\hat{\Sigma}_1 + (N_2 - 1)\hat{\Sigma}_2}{N_1 + N_2 - 2} \; ; \text{ where } \mu_1 \text{ and } \mu_2 \text{ are the two mean}$$

vectors from two different populations and Σ is the pooled variance-covariance matrix (Johnson 1998, p.420). Also, note that Hotelling's T^2 is proportional to the Mahalanobis D^2 to measure the distance between two mean vectors. Hence, Mahalanobis D^2 measure by itself is adequate to carry out the analysis and test the difference between two mean vectors on a multidimensional basis. Therefore, Mahalanobis D^2 measure was used in our analysis to assess the convergence/divergence of economic profiles at multivariate plane. Canonical correlation measures were also designed to aid into the classification in terms of economic profiles. In canonical correlation, the canonical axes maximize the correlation between linear combinations of the two sets of multivariate variables **Y** and **X**. This is obtained by maximizing the between-variable-group correlation with respect to the within-variable-group correlation. In canonical discriminant analysis, the objects are divided in to *k* groups, described by a qualitative descriptor. The method maximizes the dispersion of the centroids of the *k* groups. This is obtained by maximizing the ratio of the between-object-group dispersion over the pooled within-object-group dispersion. Given a classification variable, such as country, and several quantitative factors, the canonical discriminant analysis derives canonical discriminant functions (linear combinations of these quantitative factors) that have the highest possible multiple correlation with groups and summarizes among-class variation in much the same way that principal component analysis summarizes total variation. It facilitates differentiation of groups by taking into account the interrelationships with the independent variables (economic factors). An important property of canonical variables is that they are uncorrelated even though the underlying quantitative variables may be highly correlated. Further details of these multivariate techniques can be found in Johnson, 1998; Johnson and Wichern, 1998; Hair et al., 1998; Chatfield & Collins, 1980).

We therefore, use these Multivariate methodologies to observe the convergence/ divergence between two time domains and also between countries in terms of their economic profiles. A dimension reduction technique known as canonical discriminant analysis was then applied to classify countries that grouped together on the basis of economic profiles for both past and future time periods. The application of this technique is to classify countries according to their economic similarities and clustered them together into one or more group(s) for each time period. Groups of countries resulted from this classification analysis should exhibit high internal (within-group) homogeneity and high external (between-group) heterogeneity. Therefore, if the classification is done properly, countries within the group will be closer economy-wise, and countries between clusters will be economically distant. These analyses were performed separately for both time

periods (2002-2006 and 2008-2012) to observe the convergence/divergence of economic profiles of these countries.

TABLE 3A: Univariate and Multivariate Tests on Equality of Means: 2002-2006.						
Univariate Test Statistics						
Variable	Total Standard Deviation	Pooled Standard Deviation	Between Standard Deviation	R-Square	R-Square / (1-RSq)	F Value	Pr > F
GDP Growth Rate	1.9713	0.9681	1.8305	0.8038	4.0965	17.88	<.0001
Current Balance % of GDP	5.4474	1.8413	5.3734	0.9070	9.7583	42.58	<.0001
Inflation	3.5976	2.0598	3.1908	0.7333	2.7497	12.00	<.0001
Interest Rate	8.9015	5.2897	7.7832	0.7127	2.4807	10.82	<.0001
Multivariate Statistics and F Approximations						
Statistic			Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda			0.00570255	11.32	44	174.11	<.0001
Pillai's Trace			2.32365858	6.05	44	192	<.0001
Hotelling-Lawley Trace			19.82715627	19.71	44	117.06	<.0001
Roy's Greatest Root			14.60667444	63.74	11	48	<.0001

TABLE 3B: Univariate and Multivariate Tests on Equality of Means: 2008-2012.						
Univariate Test Statistics						
Variable	Total Standard Deviation	Pooled Standard Deviation	Between Standard Deviation	R-Square	R-Square / (1-RSq)	F Value	Pr > F
GDP Growth Rate	0.9303	0.4624	0.8612	0.7990	3.9746	17.34	<.0001
Current Balance % of GDP	4.6178	0.6999	4.7378	0.9813	52.5001	229.09	<.0001
Inflation	1.3766	0.8633	1.1757	0.6800	2.1254	9.27	<.0001
Interest Rate	3.2054	0.7324	3.2487	0.9575	22.5440	98.37	<.0001
Multivariate Test Statistics and F Approximations						
Statistic			Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda			0.00004912	48.96	44	174.11	<.0001
Pillai's Trace			2.98261443	12.79	44	192	<.0001
Hotelling-Lawley Trace			143.99562521	143.17	44	117.06	<.0001
Roy's Greatest Root			117.86345841	514.31	11	48	<.0001

EMPIRICAL RESULTS

This paper, examined the convergence/divergence of economic profiles of countries for two different time periods. First, we calculated country specific mean vectors of size four for our economic factors and their correlations (pair-wise) matrix (not reported in the paper) to identify possible convergence/divergence between two time periods in-terms of economic characteristics (see Table 1, Table 3A, and Table 3B). Results from these preliminary analyses motivated us to further our analysis on a multivariate level. Therefore, multivariate analyses of Mahalanobis D^2 and canonical correlations were done using SAS programming software and the results were reported in Tables 2-4. Mahalanobis squared distance D^2 in Table 2A & Table 2B is consistently higher for Turkey compared to other countries for both past and future time periods. It is also interesting to observe that Greece is predictably moving further away from rest of the countries into the future by exerting higher Mahalanobis D^2. Canonical discriminant analysis is then applied to group countries together according to their economic profiles for each time periods. Univariate mean comparison tests (top half of Table 3A & Table 3B) by economic factors reveal that all four economic factors are significantly differentiating country specific means with significant p-value < 0.0001 for both time periods. Country differences are found to be most widely separated according to their economic profiles by the first canonical function (Can1). This is a linear combination of economic factors as follows: *0.4104511577 GDP growth rate −0.4862015290Current Account Balance + 0.2327864762 Inflation + 0.0218072319 Interest Rate* with a high R^2 of 0.935925 between this (Can1) canonical variable and the country classification variable for the period 2002-2006 (Table 4A). For the period 2008-2012 (Can1), the linear combination of economic factors is *1.492526685 GDP growth rate −1.353566067 Current Account Balance −0.670461200 Inflation + 1.485200361 Interest Rate* with a high R^2 of 0.991587 between this (Can1) canonical variable and the country classification variable (Table 4B). To determine the dimensionality of the canonical space, eigenvalues and likelihood ratio test statistics were used. Although, the first three canonical functions are statistically significant, first two functions alone account for 94.35% and 96.05% of the total variability and the eigenvalues of these two functions are greater than one for both (past and future) time periods respectively (Table 4A & Table 4B). Therefore, these twelve countries means seem to fall into a two-dimensional subspace within the four-dimensional space of economic factors. These functions of economic profiles were then calculated for each country for both time periods and plotted in Graph 1A and Graph 1B to observe the clustered outcome. Results suggest that there are two different distinct clusters formation by the first canonical function for the current data (2002-2006). One formed by Turkey and the other cluster formed by rest of the EU countries (Graph 1A). This result is also supported by higher Mahalanobis D^2 for Turkey as reported in Table 2A. Interestingly, second canonical function may have created another new cluster by separating Portugal from rest of the countries. It is interesting to note that the first canonical variable which discriminates Turkey with respect to other countries accounts for 73.67% of the total variation. Also

note that the distance between clusters formed by the first canonical function (Can1) is much greater than the distance between clusters formed by the second canonical function (Can2) as can be seen with respect to axis (x and y) in Graph 1A. However, our analysis on the forecasted (future) data (2008-2012) does not support any improvement on the economic status of Turkey (Graph 1B). This suggests that clustering result of Turkey's economy stays parallel into the near future. That is to say, if Turkey continues on this current course of economic transformation, the prediction of Turkey's economic profile will be divergent from the EU countries (except for Greece). This result has two possible implications. First, this probably indicates that Turkey may not be able to achieve the necessary convergence in their economic profile to enter into the union in the near future. Second, since Greece's economic profile is also diverging from the EU countries in the future and creating more heterogeneous economy among EU nations in foreseeable future, Turkey may not have to attain economic similarity to enter the union.

					Eigenvalues of Inv(E)*H = CanRsq/(1-CanRsq)			
	Canonical Correlation	Adjusted Canonical Correlation	Approximate Standard Error	Squared Canonical Correlation	Eigenvalue	Difference	Proportion	Cumulative
1	0.967432	0.960130	0.008342	0.935925	14.6067	10.5059	0.7367	0.7367
2	0.896633	0.877854	0.025523	0.803951	4.1008	3.0610	0.2068	0.9435
3	0.713964	0.668433	0.063826	0.509745	1.0398	0.9598	0.0524	0.9960
4	0.272099	0.078629	0.120550	0.074038	0.0800		0.0040	1.0000

<center>**TABLE 4A: Canonical Discriminant Analysis: 2002-2006.**</center>

	Test of H0: The canonical correlations in the current row and all that follow are zero				
	Likelihood Ratio	Approximate F Value	Num DF	Den DF	Pr > F
1	0.00570255	11.32	44	174.11	<.0001
2	0.08899790	5.79	30	135.7	<.0001
3	0.45395792	2.53	18	94	0.0020
4	0.92596203	0.48	8	48	0.8645

Raw Canonical Coefficients		
Variable	Can1	Can2
DP Growth Rate	0.4104511577	0.8214539650
Current Balance % of GDP	-.4862015290	0.2879340905
Inflation	0.2327864762	0.2665211194
Interest Rate	0.0218072319	-.0422973434

CONCLUSION

This paper examined Turkey's current economic status and evaluated the prognosis of its future economy for EU integration. Economic relationship of Turkey with the western world is remarkably long and mutually beneficial. Since, the basic motivation for integration is to establish a single market; Turkey should be examined on the basis of economic dimension for integration. However, statistical analysis on Turkey's economic position with respect to other EU members do not support for economic integration hypothesis. Results of Mahalanobis D^2 found Turkey's economic profile is to be distantly situated with those of longstanding EU member countries on a multivariate dimension. Further, canonical discriminant analysis that clustered countries together separated Turkey from the group on the basis of economic profiles on a multidimensional scale. These results were highly statistically significant for both current (2002-2006) and future (2008-2012) time periods. Even though, Turkey is very motivated and challenging themselves to join the union. These research analyses do not reveal any sign of promising future for Turkey's accession to the union.

In this study, we applied the criterion of economic profiles of countries to observe the convergence/divergence of their economy between past and future by classification and clustering to assess the integration eligibility. Statistical analysis that incorporates multivariate test reveals that Turkey at present may not be classified as a member of the union nor it can achieve economic parallel in the near future on the basis of economic profiles that we have considered in this paper. However, given that Greece's future economic profile is also moving further away from the other union member countries provide an opportunity for a favorable argument for Turkey's accession to the union. Although, all member countries must unanimously agree on Turkey's membership for its EU accession to be successful. There is no certainty among the current EU members to accept Turkey in the union. Nonetheless, Turkey would like to place a considerable emphasis on the long-term stabilization of their economy for a more cohesive union. As the policy makers concentrate on these economic factors and implement necessary policy changes, Turkey may eventually achieve economic similarity for the well being of future Turkey and the European Union.

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GRAPH 1A: Plot of Canonical Discriminant Functions: 2002-2006

Plot of Can2*Can1: Symbols are value of Country Code

```
Can2 ,
  6 ^
    ,
    ,                                              T
    ,
    ,                                        T          A=Austria
    ,                                                   B=Belgium
    ,                                                   N=Finland
  4 ^                                                   F=France
    ,             N                                     G=Germany
    ,                                       T           R=Greece
    ,                                                   I=Ireland
    ,                                                   L=Italy
    ,        H N                                        H=Netherlands
    ,                                       T           P=Portugal
  2 ^     N    H                                        S=Spain
    ,        H    G           I       I I              T=Turkey
    ,               G
    ,        H       A       I           T
    ,        N         B           I
    ,                           R R
  0 ^          B    B A A
    ,          H B       F         R
    ,                        S     R
    ,                    F      S
    ,                 F FF         S  S R
    ,                 A    L
    ,                 AL
 -2 ^        G        L              S
    ,                 L
    ,                 L
    ,
    ,
    ,                 PP  P
 -4 ^
    ,             P
    ,                 P
    ,
    ,
    ,
 -6 ^
    ,
      ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
      -7.5   -5.0   -2.5   0.0   2.5   5.0   7.5   10.0

                            Can1
```

NOTE: 4 observations hidden.
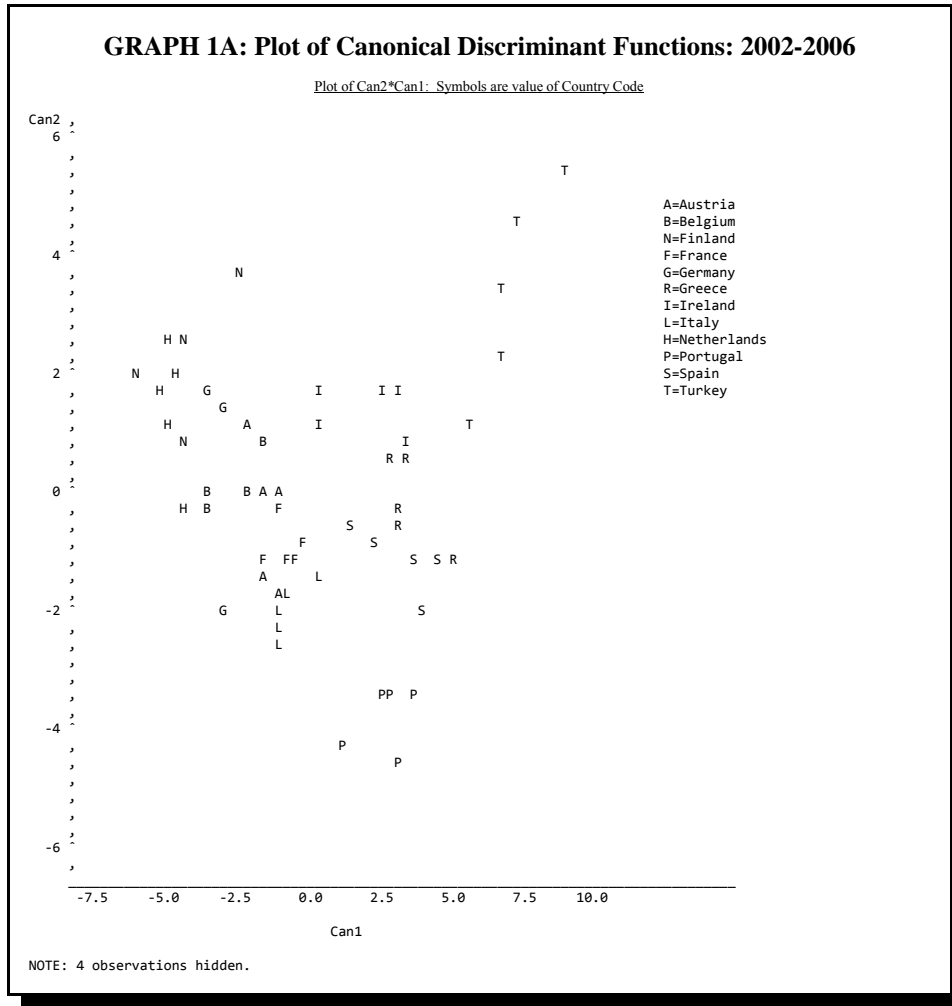
GRAPH 1B: Plot of Canonical Discriminant Functions: 2008-2012.

NOTE: 9 observations hidden.

Plot of Can2*Can1: Symbols are value of Country Code.

```
Can2 ,
     ,
10.0 ^                                   T
     ,
     ,                                     T
     ,                                              A=Austria
 7.5 ^                               T              B=Belgium
     ,                                 T            N=Finland
     ,                                              F=France
     ,                                              G=Germany
     ,                                              R=Greece
 5.0 ^      H                      T               I=Ireland
     ,      HH                                      L=Italy
     ,      H HN                                    H=Netherlands
     ,                                              P=Portugal
     ,      GA  NN                                  S=Spain
 2.5 ^       AG                                     T=Turkey
     ,       A AGG
     ,
     ,
     ,                               RRR
 0.0 ^       B  B
     ,          B
     ,             I                      R
     ,          FF    II
     ,          F
-2.5 ^
     ,          LI
     ,          L L  IS                   R
     ,           L     S
     ,                 S
-5.0 ^
     ,             P
     ,              P
     ,           S
     ,            S   P
-7.5 ^               P
     ,                P
     ,
     ,
     ,
-10.0 ^
     ,
     _____
      -20      -10       0       10       20      30

                        Can1
```
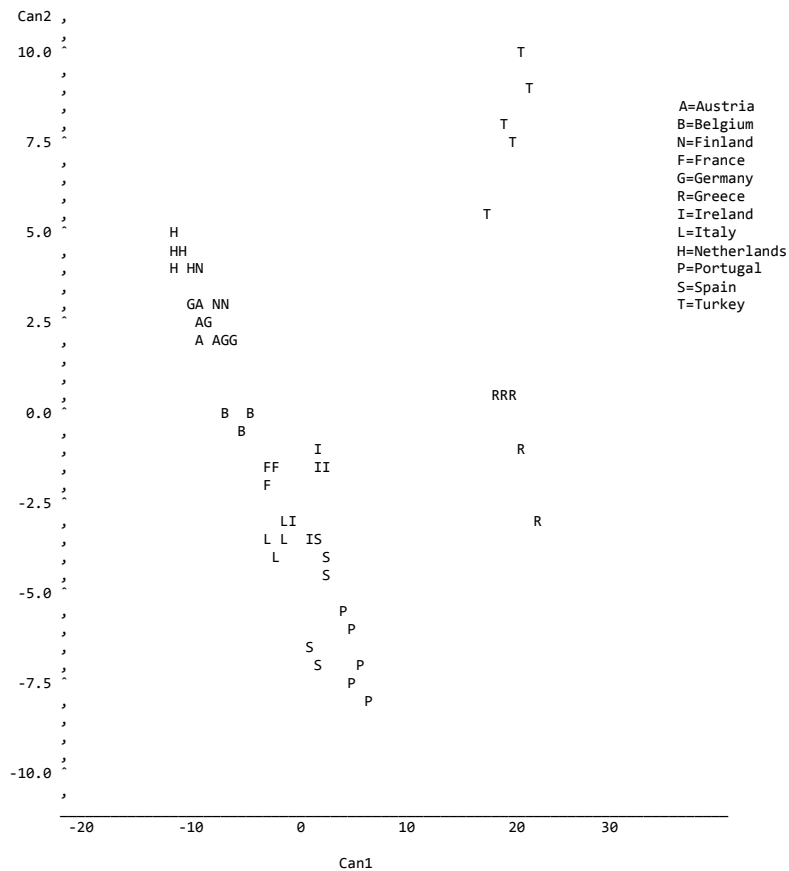
ENHANCING ORGANIZATIONAL EFFECTIVENESS THROUGH THE IMPLEMENTATION OF SUPPLIER PARKS: THE CASE OF THE AUTOMOTIVE INDUSTRY

Andrew Czuchry, East Tennessee State University
Mahmoud Yasin, East Tennessee State University
Damir L. Khuzhakhmetov, East Tennessee State University

ABSTRACT

Organizations in the automotive industry are facing increasing competitive pressures which are reshaping their strategies and operations. This research utilizes the Baldrige National Quality Award as an overarching strategic framework to implement an open system approach to supplier parks and capitalizes on the utilities of the Balanced Scorecard (Kaplan and Norton, 1992; 1996; 2007) to translate strategies into actions that could result in improved manufacturing, logistics operations, and accelerated innovations in the automotive industry. A conceptual framework is suggested to help realize the strategic and operational benefits attributed to the effective implementation of supplier parks.

INTRODUCTION

The increasingly changing competitive environment has recently reshaped the strategies and operations of organizations in different industries. In this context, organizations in the automotive industry are not an exception. Moreover, since competition is more severe in the industry, organizations are constantly striving to gain a competitive advantage in any activity possible: manufacturing, marketing, and human resource management. The North American automotive scene today is marked by a strange dichotomy. Surveys show that the three major Detroit-based automakers have dramatically improved manufacturing performance, particularly in quality and productivity, but they continue to lose market share amid consistently weak profits (Wong, 2006; Detroit's Big Three automakers face highly uncertain future, 2007).

Meanwhile, their three major Japan-based rivals are rapidly gaining ground while recording strong and consistent profits (Leow and Shi, 2006). Today, the average profit gap between domestic and Japanese automakers is $2,400 per vehicle in favor of foreign ones (Harbour-Felax, 2006). In 2006 Chrysler had a loss of $1.5 billion in the third-quarter, which broke a streak of 12 consecutive profitable quarters. The shortfall occurred largely because the auto maker misjudged the market and accumulated 100,000 unsold vehicles - in addition to its reported inventory (Mayne, 2006). Other

analysts have even less encouraging news: Morgan Stanley analyst Adam Jonas projects the company's losses in 2007 of more than $1 billion. Chrysler's market share has fallen from 14.5% in 2000 to 12.9% in 2006 (Kiley, 2007). GM posted a $10.6 billion loss for 2005, its largest since 1992 (Carty, 2006). GM's vice president of global sales, service and marketing John Middlebrook, announced a slight rise in market share in the United States -- from 23.8 percent in the first quarter of 2006, to 24.1 percent in the second quarter, then 25.1 percent in the third quarter (GM Market Share Increases…, 2006).

The position of the third member of The Big Three - Ford - is not any better-off: its net loss widened to $5.8 billion in the third quarter of 2006 - its worst quarterly performance in 14 years - as it took a hit from costs related to the restructuring of its key North American business. The last time Ford posted a loss of this size was in the first quarter of 1992, when a net loss of $6.7 billion was reported (Wong, 2006). Simultaneously, Ford's market share dropped from 20.2% in 2002 to 17.4% in 2005 (Taylor, 2006).

Meanwhile the closest rivals of the Big Three - Toyota and Honda - are enjoying growing sales and market share. In 2006 Toyota passed Ford as the Number Two automaker in the US and now it's approaching GM which enjoyed the top spot for the last 75 years (Toyota Getting Ready to Ramp Up U.S. Production, 2007). There are many reasons why Detroit is failing to defend its home turf, most of these reasons relate to fundamental aspects of the automotive business where the Detroit-based companies have not yet fully addressed structural and cultural barriers (Maynard, 2003; p. 7).

GM, Ford and Chrysler remain behind in many key areas -- product engineering, manufacturing flexibility, labor practices, supplier relations, steep price discounting, unfavorable currency exchange rates, and high costs of health care and pensions (Iyengar and Chaudhuri, 2004). Their largest competitive advantage is the loyalty of domestic customers. Even after Toyota has been present in the US market for more than 20 years with several factories around the country; customers still tend to view Toyota as a foreign player. Toyota's market share differs by the region: Midwest 11.4%; South 17.2%; Northeast 17.3%; West 23.0% (Welch, 2007). Culture, more than economic reasons tend to shape Toyota's market share: customers in Texas are more willing to support a domestic manufacturer while those in New York or California are influenced by other considerations (Welch, 2007).

Faced with dwindling profits and a customer base that now assumes quality and performance as givens, the automotive industry struggles to find sustainable competitive advantages and avoid price only competition that exacerbates the current downward tailspin in their markets. The objective of this research is to suggest an open systems approach to capitalizing on supplier parks to leverage Research and Development, and improve manufacturing and logistics operations in today's global competitive environment. We begin by reviewing the relevant literature and recognize that the Baldrige Performance Excellence model provides an overarching framework that identifies performance gaps and/or opportunities for improvement. In the early 1990's the Baldrige

Award winners suggested that prime contractors abandon their approaches of competing suppliers on the basis of lowest price and begin regarding suppliers as partners. We suggest that such a strategy is vital in order to fully capitalize on the potential benefits of supplier parks. Please see Table 1. Since the Baldrige process is non-prescriptive and a prescription appears to be an essential feature of gaining a sustainable competitive advantage, we use the Balanced Scorecard to help translate performance gaps into viable action plans. The conceptual framework that results is given in Figure 1. We end the article by suggesting managerial implications to realize the benefits summarized in Table 1 while avoiding some of the pitfalls that a more closed system implementation strategy could encounter.

TABLE 1: BENEFITS OF SUPPLIER PARKS	
Benefit	Description
Set up times significantly reduced in the warehouse.	Cutting down the set up time to be more productive allows the company to improve its bottom line to look more efficient and focus time spent on other areas that may need improvement (Chuah, Yingling, 2005; Pfohl and Gareis, 2005; Hillman, 2006; Seetharaman et al., 2007; Aigbedo, 2007).
The flow of goods from warehouse to shelves is improved	Having employees focused on specific areas of the system allows them to process goods faster instead of having them vulnerable to fatigue from doing too many jobs at once and simplifies the tasks at hand (Helms and Dileepan, 2005; Bhagwat and Sharma, 2007; Fredriksson, 2006; Gammeltoft, 2006).
Employees who possess multiple skills are utilized more efficiently	Having employees trained to work on different parts of the inventory cycle system allows companies to use workers in situations where they are needed when there is a shortage of workers and a high demand for a particular product (McWilliams et al., 2001; Morris et al., 2004; Clark et al., 2006; Eriksson, Ortega, 2006; Ramalho and Sanyana, 2006; Sako, 2006).
Better consistency of scheduling and consistency of employee work hours	If there is no demand for a product at the time, workers don't have to be working. This can save the company money by not having to pay workers for a job not completed or could have them focus on other jobs around the warehouse that would not necessarily be done on a normal day (McWilliams et al., 2001; Morris et al., 2004; Eriksson and Ortega, 2006; Ramalho and Sanyano, 2006; Sako, 2006).
Increased emphasis on supplier relationships	No company wants a break in their inventory system that would create a shortage of supplies while not having inventory sit on shelves. Having a trusting supplier relationship means that you can rely on goods being there when you need them in order to satisfy the company and keep the company name in good standing with the public (Albright, 2005; Helms and Dileepan, 2005; Clark et al., 2006; Aigbedo, 2007; Guo and Gershenson, 2007)
Supplies continue around the clock keeping workers productive and businesses focused on turnover (sales)	Having management focused on meeting deadlines makes employees work hard to meet the company goals to see benefits in terms of job satisfaction, promotion or even higher pay (Chuah, Yingling, 2005; Helms, Dileepan, 2005; Clark et al., 2006; Aigbedo, 2007).

Figure 1
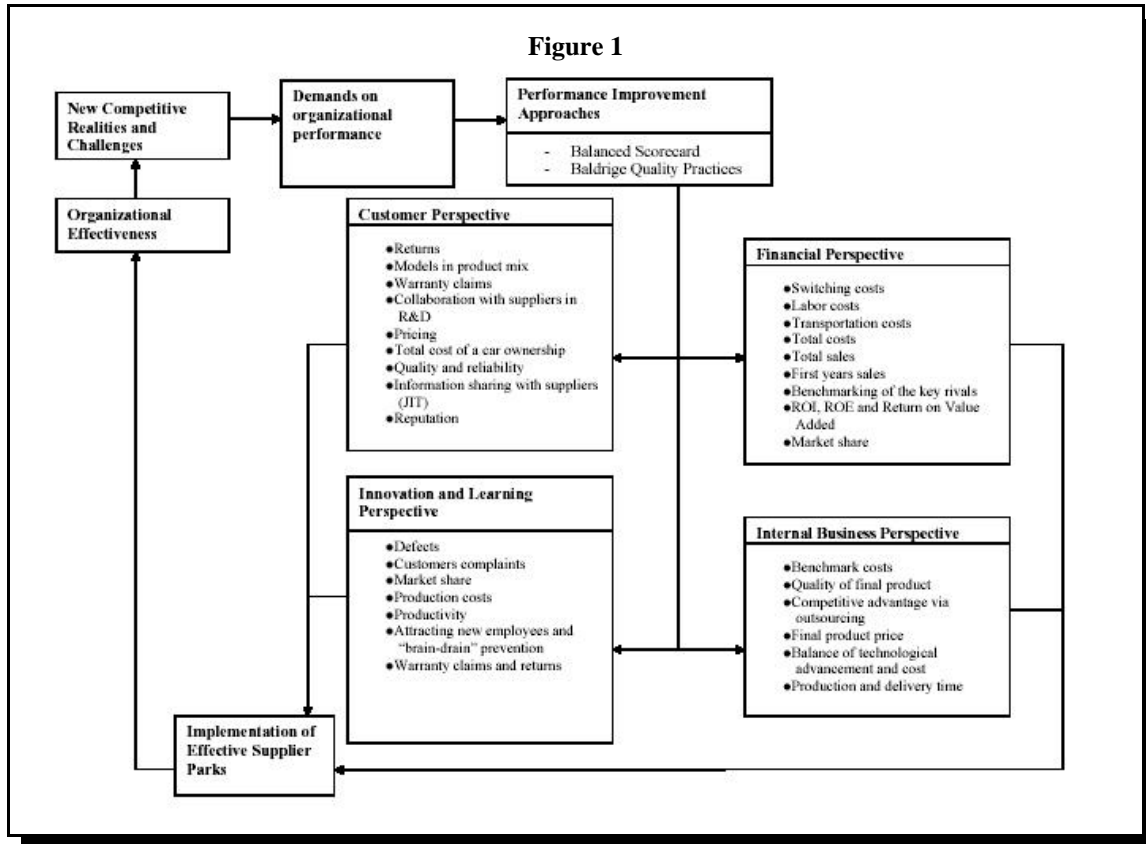
RELEVANT LITERATURE

Treating suppliers as partners departs from the traditional way of doing automobile manufacturing with one Original Equipment Manufacturer (OEM) and independent suppliers that compete only upon price. Such an approach was shown to be costly and inefficient (Sako, 2003; Morris et al., 2004; Aigbedo, 2007). With the "price-compete" concept (Maynard, 2003; Shister, 2005), suppliers were trying to get parts to the OEM at the lowest cost possible; otherwise a competitor would take their business. A supplier was paid after a purchase agreement was completed and really did not devote significant attention to the end customer that purchased final product - an automobile. Although quality control procedures reduced some supplier defects, latent manufacturing problems were often not obvious at inspection. Defective parts often found themselves in the automobiles that were delivered to the end customer. An early, perhaps first improvement, was to motivate suppliers to take ownership for quality and persuade them be interested and accountable for delivering high quality parts (Morris et al., 2004).

Traditionally a large automotive manufacturer carried all major R&D responsibilities and expenses. Economies of scale, large market share, and competition that was less aggressive than

today allowed giants such as GM to absorb costly research and development and distribute these costs over the huge number of products without losing market share (Johansson and Karlsson, 2007). In the current highly competitive arena, any cost that doesn't add value to the final product, or adds less value than is cost justified, should be eliminated (Total Cost Management for Competitiveness, 2002; Curkovic and Sroufe, 2007). The new appointed CEO of Procter & Gamble A.G. Lafely saw that "P&G couldn't meet its growth objectives by spending greater and greater amounts on R&D for smaller and smaller payoffs" (Huston and Sakkab, 2006. p.15). After the company took necessary steps to switch from an "invent it ourselves" model to a "connect and develop" model P & G transformed its strategy and culture for innovation. Now P & G collaborates with suppliers, competitors, scientists, entrepreneurs, and others who can improve, scale up, and develop or enhance some of the competencies either better or at a lower cost than P&G could previously (Huston and Sakkab, 2006). Furthermore, companies that do all R&D at their own expense suffer from low return on the innovation, merely due to lack of sufficient competence in the particular field. As a result, innovations that could save costs and/or improve quality and/or performance lie dormant throughout the supply chain. Small companies that focus on one or a few innovation products/processes have better detailed knowledge and often realize an improved learning curve, lower cost and higher return on R&D expenses (Arnoud and Bart, 1990; Gammeltoft, 2006; Miyagiwa and Ohno, 2007).

Third, the dynamic and complex environment of today's markets often forces companies to concentrate on their core competencies. Customers want either low cost or uniqueness of a product, preferably both (Lau et al, 2007; Kumaravel et al, 2007). One important implication that e-commerce brought to the manufacturing industry was the "build-to-order concept". Companies strive to keep their inventories as low as possible and start assembling after receiving a specific customer order. A customer doesn't just choose one of the automobiles that are available on a dealer's lot anymore Today's buyers make decisions defining the main characteristics and attributes of the automobile they will purchase even including previously unthought-of parameters such as engine performance, body type and color, chassis, and interior. As a consequence, manufacturers must be agile and flexible to meet these customer requirements while ensuring on-time delivery of the final product (Gardner, 2007). The more options a manufacturer can offer a customer, the larger advantage it appears to gain over less agile competitors. When options are offered customers can personalize their orders so that each car becomes an individual product. The increased variety of components must be managed by suppliers, taking into consideration the requirements for on-time delivery and quality. Consequently, suppliers must be able to deliver the necessary components or subsystem immediately on demand; in practice supplier response times are measured in hours or even minutes after receiving an order. This process requirement leads to increased pressure for rapid delivery time and flexibility, without sacrificing quality (Pfohl and Gareis, 2005). Thus, the third objective of OEMs is to locate their suppliers closer in terms of distance and response time.

Finally, innovation often suffered, often because of the lack of a shared culture. Companies with thousands of employees provided shared company policies, cultures, visions and strategies, without having a focal place for innovations to get identified and delivered (Kaplan and Norton, 1996; Gill, 2002; Konnola, et al, 2007). OEM's placed purchase orders to product and/or subsystem specifications without capitalizing on potential supplier innovation by involving suppliers in generating innovative ways to respond to end-customer requirements. Hence, innovative product enhancement opportunities with simultaneous chances to eliminate process scrap and waste were not recognized or realized. Thus, the fourth objective of OEMs became one of making the entire process more diverse, involving different and varied suppliers and employees with dissimilar visions and strategies. The objective was to bring a new flow of innovation to the manufacturers (Franklin, 2007; Galuszka, 2007).

A supplier park is defined as a cluster of suppliers situated close to a final assembly plant (Sako, 2003; Morris et al., 2004; Pfohl and Gareis, 2005). In other words, geographic concentrations of companies that are connected among each other, work in a particular field, and are part of a supply chain for an OEM become such a supplier park. The attributes of being within a short distance; sharing information on a constant basis; and being engaged in long-term business relationships with well developed communication tools and links helps ensure that the OEM can rely on suppliers to meet delivery commitments. The end result is that the need for a bulk of inventory "just in case" can be avoided and a JIT (Just-in-Time) strategy becomes a practical reality. Inventory is seen as incurring costs instead of adding value, contrary to traditional thinking and allocation based accounting systems. Under the JIT philosophy, businesses are encouraged to eliminate inventory that doesn't add value to the product. In short, the just-in-time inventory system is all about having "the right material, at the right time, at the right place, and in the exact amount" (Just in Time (business), 2007; Aigbedo, 2007). Some of benefits that result from a JIT philosophy, labor management efficiency and supplier relationships, are listed in Table 1.

As long the components of a supply chain are in a close touch there is no need to have huge inventory in stock. Close connection of supplier factories makes loading/unloading, handling, and delivering costs less expensive (Morris et al., 2004). The direct goal of automobile manufacturers in setting up supplier parks is to make the process less costly, increase efficiency and lower labor costs. Often supplier parks are established in green-field sites, where land is less expensive and the labor is comparatively cheap (Pfohl and Gareis, 2005). Additional goals may also include reduced inventories, reduced transport costs, lower capital and working costs, cheaper handling/loading/unloading/packaging costs, lower labor costs in supply firms on park as compared to those of the assemblers, and modules/components delivered directly to the point of fit (Morris et al., 2004; Rose et al., 2007).

In summary, the literature reveals five distinct ways to address the problem of shortening design cycle time without losing quality and increasing costs: The first is by increasing resources in terms of staff and capital; second is by treating design as a total system involving suppliers; third

is encouraging free information flow and parallel development activities; fourth is increasing manufacturing flexibility, and fifth is automating the design process itself (De Meyer and Van Hooland, 1990; Guo and Gershenson, 2007; Rose et al., 2007). Although tradeoffs exist, supplier parks appear to result in a benefit for several of the attributes listed above. For example, when a supplier park concept is deployed suppliers become engaged in the design process (Sako, 2006). Furthermore, information flow is improved as the culture becomes one of partnering rather than competing (Ramalho and Sanyana, 2007). Long-term contractual relationships with an OEM encourages suppliers to share their intellectual capital without the fear of losing their competitive advantage and future business (Hillman, 2006). Geographical proximity enhances manufacturing flexibility since suppliers tend to rapidly execute orders from the OEM often delivering within hours or even minutes. The concept transforms large batch manufacturing philosophies with their huge bulk inventories into much more flexible-agile manufacturing systems that are ready to respond to changes in consumer preferences (Albright, 2005; Aigbedo 2007). Such an approach could also more readily benefit from lean thinking and six sigma tools applied in a more integrated fashion under the umbrella of the Baldrige framework.

The supplier park concept makes it possible for auto assemblers to concentrate on core competencies and outsource various responsibilities to suppliers (Fredriksson, 2006). In addition to outsourcing, the supplier park strategy offers the potential to further leverage the OEM's R & D by engaging the suppliers with a C & D culture like the one successfully put into practice by P & G. When Greenfield sites are utilized with new model projects the potential for reduced investment in fixed assets also surfaces as a potential benefit. Suppliers gain an opportunity to become responsible for high value-added contributions in the design, manufacturing, and assembly of modules and systems (Pfohl and Gareis, 2005; Sako, 2006). Suppliers in turn may become more committed to the final product; for example, on a VW supplier park in Resende, Brazil suppliers are not paid until the final product is sold (Sako, 2005; Ramalho and Sanyana, 2002). Guided by the literature and the authors' experience with open system approaches to manufacturing and innovation, a Baldrige-Balanced Scorecard based conceptual framework is suggested in the next section. Such an approach could help realize some of the benefits summarized in Table 1.

A PROPOSED CONCEPTUAL FRAMEWORK

A conceptual framework based on the Balanced Scorecard and National Baldrige Quality Award is suggested in Figure 1. Starting on the left hand side of Figure 1 let's walk through the conceptual framework. Recognizing the demands placed upon organizational performance by new competitive realities and challenges the organization seeks approaches for enhancing performance. The Baldrige framework combined with [best] practices that can be tailored to the organization's unique business needs provide an overarching strategic framework that helps an organization identify gaps seven specific categories: "Leadership; Strategic Planning; Customer and Market

Focus; Measurement, Analysis, and Knowledge Management; Workforce Focus; Process Management; and Results" (Baldrige National Quality Program. National Institute of Standards and Technology; 2007). Assisted by the Balanced Scorecard (Kaplan and Norton, 1992; 1996; 2007) process gaps in each of the seven Baldrige categories can be mapped into metrics/measures from four major perspectives: Customer; Financial; Innovation and Learning; and Internal Business. (Please see Figure 1.) Overlaying the strategy to implement an effective supplier park, the combined organizational effectiveness can be evaluated as a total system comprised of the OEM and the suppliers included in the "Supplier Park". In a business context the conceptual framework of Figure 1 is open in the sense that the suppliers are included in the OEM's business system. From a control theory view, the feedback loop using the four major metrics from the Balanced Scorecard facilitates evaluation of the total system's performance and helps identify appropriate corrective actions to drive organizational effectiveness to deliver ever increasing value for customers. This latter point is accomplished by tailoring [best] practices (or practices from which the organization can learn) to enhance the organization's performance by responding to the new competitive realities and challenges while simultaneously driving the detailed metrics from each of the Balanced Scorecard's four major perspectives to ever increasing desired levels of performance. A way that the framework could become operational is now briefly illustrated.

Suppose the OEM recognizes an issue of significant importance. This issue may be one of the vital few improvement opportunities identified from an assessment to the Baldrige criteria and/or by any means that the organization's senior leadership utilizes to establish issues of high priority. For the purposes of this article we will concentrate on the implementation of effective supplier parks. However, it is possible to generalize the approach to other issues of significance. A suggested first step is to analyze the issue from the four perspectives shown in the conceptual framework. As a coaching point, drill down using the metrics in each of the blocks below the "four perspectives" in sufficient detail to be able to : 1) measure the organizational effectiveness of the current business system; and 2) measure the sensitivity of the organizational effectiveness improvements (plus or minus) due to any proposed change in the total system processes. In this context the total system is defined as the OEM's plus the supplier's subsystems. Let's utilize the framework to address the strategic decision: should an OEM implement a supplier park?

Financial

Since the financial perspective often is most critical to shareholders let's begin here. The sensitivity of such a strategic decision should result in increasing the wealth of the shareholders otherwise the concept is not likely to be embraced. Each of the metrics is evaluated under Financial Perspective to quantify the potential impact of such a decision. Clearly, pro-forma data is used to make this assessment since we are using projected outcomes. However, the importance of benchmarking both processes and measures in underscored to add credibility to these forecasts.

Often internal benchmarking between individual profit centers provides the highest levels of confidence in these projections. Highlights of this analysis generally will include most if not all of the parameters listed in Figure 1. Transportation costs will generally have significant influence on the supplier park decision. Start with current transportation costs from different suppliers that might be international and spread across the globe. Costs that are of tariffs and custom duties are included. Additional factors of high sensitivity are supplier reliability and the switching costs that are related to changing the location of these suppliers; or the cost of switching the suppliers should they be unwilling to invest in relocation. Supplier parks generally work well for those partnerships that have long-term, well established OEM-supplier relationships with high switching costs. The potential OEM benefits from offloading the burden and risk of large capital investments to suppliers (Sako, 2005) should be quantified. Labor costs are also a major influence in making a decision. So it becomes important to quantify the potential of establishing the supplier park in a region with lower cost labor which helps reduce total costs and increase profits (Bible et al., 2006). When the labor/total costs ratio is large the supplier park concept tends to be more favorable. Economic development policies and incentives for a particular region will have a potentially significant influence. In addition, the baseline costs for buildings and rents in the community are important (Kaplan and Norton, 1996; Bassen et al., 2006). It may be worthwhile to consider an integrated modular consortium strategy, meaning that land and buildings are owned by an OEM (for example Volkswagen's supplier park in Resende, Brasil; Smart in Hambach, France) (Sako, 2005; Ramalho, Sanyana, 2007).

Additional pro-forma estimates should be generated and analyzed. Parameters that will have the greatest influence on the ultimate decision include: total sales, growth of operating income; comparison with industry rivals; growth of Return on Investment; Return on Value Added, growth of Return on Equity; rate of total costs decrease; quarterly sales growth, and finally rate of market share growth (Kaplan and Norton, 1996; Reisinger et al., 2006). Return on Value Added (ROVA) also plays large role in defining the efficiency of outsourcing. In this context the strategy outsourcing some portion of production to a supplier could have the effect that of improving Net Income (NI) (Cuccuza and Frezell, 2007).

Customer

Customer satisfaction is often a key to a company's prosperity (2006/7 Criteria for Performance Excellence, 2006/7). Pro-forma estimates of sales growth of those products that are manufactured in the park and the ratio of these products to all company's sales are helpful indicators of the benefits that could accrue. Data showing that customer satisfaction is becoming a more and more subtle criterion for making buying decisions should be addressed. Recent studies showing that 80 percent of customers that switched to other vehicle brands were highly satisfied with their previous brand (Arthur and Ban, 2007) should be used to factor or reduce projected sales and profit

margins if customer satisfaction does not influence automobile customer buying decisions.   The inter-relationship of customer satisfaction and product innovation may also become an important relationship. The interaction between Customer Purchasing Decisions and Innovation and Learning is emphasized in Figure 1. As suppliers become more engaged in product design R&D costs are often reduced by relying on suppliers' core competence (Kaplan and Norton, 1993; 2007). These reductions could be estimated and factored into the financial forecasts cited above.

Market share depends greatly on pricing of the product. This is especially true in present automobile markets where most manufacturers have comparable quality. For example, Hyundai is acknowledged to be one of the most reliable cars, while its prices are relatively low (Kiino, 2007). The potential for a supplier park to reduce the product's price without sacrificing quality should be evaluated in terms of the resulting impact on attracting additional customers. History indicates that when an OEM is more concerned with the initial price for the product, a customer's buying decision might be influenced by life cycle costs or the total cost of ownership (Cucuzza and Frezell, 2007). When the total cost of ownership becomes the driving consideration, the purchase cost of the vehicle, financing, depreciation, insurance, registration, maintenance, fuel, repairs and other costs play a role no less important than the initial price for an automobile. Thus, depending on the duration of ownership, a high-priced luxury car may in fact have a lower total cost of ownership than a mid-priced vehicle with a poor resale value and high maintenance costs (Arthur and Ban, 2007). Quality and reliability of a product are generally important factors in a customer's choice of the right automobile. Reliability and warranty claims should be included in the analysis as well as measures of both initial quality and reliability over the life of the vehicle (Bible et al., 2007). Many automakers focus their measurement on initial quality. However, both initial quality and long-run reliability are important when assessing life cycle costs and could become increasingly important from the customer's perspective.

The company's reputation along with service quality, service satisfaction, product quality often influence a customers' purchasing decision (Devaraj et al., 2001; Pitta et al., 2006). If several models are supported by an individual supplier park, market demand by segment becomes important. In a highly competitive industry, the product mix relative to that of the competition's can determine the company's success. A product portfolio map by market segment and could be based on traditional vehicle families, demographic or psychographic dimensions. For each segment, internal and competitive measures such as capacity utilization, sales volume, incentives and vehicle profitability should be measured (Cuccuza and Frezell, 2007) and factored into the pro-forma analysis.

Internal Business

Production costs are the biggest concern of automobile companies. Since lower pricing becomes more feasible as the costs are reduced, the potential for executing Just-in-Time

manufacturing concepts should be evaluated. Suppliers and the OEM are in a process of constant information sharing, and a needed amount of supplies is being brought to the OEM on a constant basis (Kaplan and Norton, 2007). Thus JIT and supplier parks are interrelated concepts. The JIT approach enhances the chances of supplier parks being successfully implemented. On the flip side, a supplier park facilitates implementing the JIT model in its purest form: distance proximity; constant sharing of information among the partners; long term relationships established among the partners; commitments of the partners to meet expectations; and commitments (financial and non-financial) to meeting these expectations (Pandey, 2005). Supplier parks decrease the production and delivery cycle time. Large corporations tend to experience difficulties when suppliers are spread across the globe. At best, challenging logistics and distribution problems must be solved; and at worst some in the supply chain must warehouse in process inventories. The concept of JIT has the potential of being more completely fulfilled in supplier parks. Parts are delivered to an assembler when needed and strong cooperation among partners cuts the wait-time significantly, so a customer gets a final product faster (Sako, 2003; Aigbedo, 2007).

Companies in supplier parks are in constant communication and share process information (Kaplan and Norton, 2001). Although suppliers become an integral part of the OEM's business model, appropriate control over suppliers must be maintained (case of Volkswagen's factory in Brasil - Sako, 2005). Configuration control mandates a systematic approach to implementing innovations no matter the source. For example, in the Volkswagen case; before an innovation or improvement is implemented impacts are quantified in terms of importance and appropriateness. These impacts are discussed during weekly meetings where managers of all the partners review the production process (Ramalho and Sanyana, 2002). If a proposed innovation is too costly; time-consuming; or might conflict with other parts, then these innovations will most likely be delayed until a future release to production or new model design. Generally, R&D developments and innovations are shared among partners, so several members can benefit from each technological innovation.

Innovation and Learning

Management experts agree that Innovation, Learning and Growth are the keys to strategic success of a company and the foundation for the future. A learning organization is one in which knowledge is managed, harvested and deployed to create value. New ideas are vital to the future of the automotive industry, and industry executives continually seek the next big idea (The Balanced Scorecard and Knowledge Management, 2002).

In manufacturing learning is seen in reduction of defects, reduction of production costs, and increased productivity. Tracking these criteria helps define appropriate training for employees (Ramalho and Sanyana, 2002). Market share growth is one index of a company's rate of Innovation and Learning. The potential of reducing time to market could become a factor due to OEM-suppliers

links becoming more mature and stable within a supplier park. A leak of intellectual capital is becoming an increasing threat (Horvat, 2004). Major reasons, such as brain drain and upcoming retirement, could be mitigated with improved measurements and corrective action. Ways to leverage the vast knowledge base before it walks out the door should be sought.(Top Private Security Companies, 2006). It is unclear if supplier parks will increase or decrease these risks; however, such risks should be analyzed and appropriate risk mitigation plans should be put in place prior to implementation.

Innovation of the product or process might bring a competitive advantage to a company if the gains from this innovation justify the costs of its acquiring and possessing the resulting intellectual property. Trade secrets may offer a more cost-effective route. Nevertheless, an OEM in a supplier park may develop its own technologies. However, the possibility of a C & D strategy is suggested for expensive innovations that are better pursued by suppliers with strategically aligned core competencies. One cost-cutting strategy is outsourcing of any non-core processes (Clark et al., 2006). Appropriate technology development and innovation cooperatively pursued by both the OEM and their suppliers offers an attractive approach to gaining a sustainable competitive advantage with regard to technology and process innovation. Meanwhile, the readiness of suppliers to carry some of the R&D costs while maintaining a competitive advantage provides incentives for the OEM to make this particular supplier "a supplier of choice" and establish long-term relationships (Sako, 2006). A strategic perspective that balances core competencies between the OEM and its suppliers appears to offer an improved innovation strategy for many in the automotive industry. Such a strategy results in leveraging the OEM's R & D efforts rather than merely outsourcing them.

CONCLUSION

As the automobile industry becomes more competitive, car manufacturers will focus more on customer service, product quality and innovation, faster responses to customers' demands, and more agile production. This is not achieved easily when large capital investments or significant set-up times are necessary to make these changes. With new management practices many OEMs started collaborating with their suppliers. By these means some of them spread their R&D costs, made suppliers interested in the final product, increased the quality of the supplies, and reduced cycle time from an order to delivery of supplies. The trend once started inevitably led to almost full cooperation of suppliers and OEMs which took form of supplier parks. The practical implementation of a supplier park concept is barely ten years old. The earliest example was Volkswagen's site in Brazil built in 1997. Since then the concept proved to be a useful strategy for increasing manufacturing efficiency and is now deployed worldwide. Today dozens of automobile supplier parks may be found in Asia, Europe, Latin and North Americas. With an ever increasing number of OEMs embracing the concept of supplier parks, such a strategy may become even more pervasive throughout the industry.

As organizations in the automotive industry consider supplier parks as a potential for responding to increasing competitive pressures they may benefit from the conceptual framework offered in this article. The conceptual framework utilizes the Baldrige National Quality Award as an overarching strategic framework to implement an open system approach to supplier parks and capitalizes on the utilities of the Balanced Scorecard (Kaplan and Norton, 1992; 1996; 2007) to translate strategies into actions that could result in improved manufacturing, logistics operations, and accelerated innovations in the automotive industry. Potential strategic and operational benefits are summarized in Table 1 and coaching points for implementation are discussed from Customer, Innovation and Learning, Internal Business and Financial perspectives.

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A METHODOLOGY FOR EXTRACTING QUASI-RANDOM SAMPLES FROM WORLD WIDE WEB DOMAINS

Michael Featherstone, Jacksonville State University
Stewart Adam, Deakin University
Patricia Borstorff, Jacksonville State University

ABSTRACT

The purpose of this paper is to describe a process for sampling specific domain name zones on the World Wide Web. Because of the size of the Web, sampling strategies must be employed in order to effectively model and study the Web business environment.

This paper discusses Various efforts employed to sample the Web, which ranged from random generation of Internet Protocol Addresses and domain names, to the process finally employed to create descriptive models of the dot-com domain name zones. The paper suggests that sampling the Web Top Level Domains offers a reasonable alternative for business researchers because it requires only familiarity with the use of the simple Web utilities such as File Transfer Protocols to obtain initial domain name listings.

INTRODUCTION

The Web is characterized by relentless growth. VeriSign estimates over 1 million domain names are acquired in the dot-com domain each month. But how much of the growth of the Web may be attributed to business? What types and proportions of businesses populate the Web? Is the Web more amenable to large business or to small business? Does the Web consist mostly of entrepreneurial start-ups or companies who have adapted their pre-existing business models to this new environment? How 'entrepreneurial' is the Web? Throughout (or because of) the frenzy of the dot com craze and the uproar over the bursting of the dot com bubble in 2001 many of these fundamental questions about business on the Web have remained unanswered.

Barabási (2002) states 'Our life is increasingly dominated by the Web. Yet we devote remarkably little attention and resources to understanding it'. Relative to the extensive literature produced on the importance and potential of the Internet as a tool (Porter, 2001) or as an element of the physical world's business environment, empirical research regarding the demographics of the vast majority of Web business entities, or their marketing and revenue strategies, is limited and sketchy (Colecchia, 2000; Constatinides, 2004). Compounding the problem, Drew (2002) notes that

'Many academic empirical investigations and surveys in e-business suffer from small sample sizes, with consequent questions as to the meaning, validity and reliability of findings'.

Because of the extraordinary growth and the sheer size of the Web, sampling methodologies are essential in order to make valid inferences regarding the nature of Web businesses. This paper discusses probability sampling methodologies which may be employed to give researchers tools to assist in answering some of the fundamental "how much", "how many" and "what type" questions regarding the conduct of business on the Web. The paper discusses procedures employed, as well as mistakes we made which finally pointed to a more productive process. This methodology does not require mastery of esoteric web software packages, nor familiarity with Web crawlers or algorithms they employ to sample pages on the Web.

WEB SAMPLING ISSUES

The original objective of the present research project required that we draw a representative sample of Web sites across multiple top level domains. The first attempt adapted a method based on O'Neill, McClain and Lavoie's (1998) methodology for sampling the World Wide Web utilizing Internet Protocol (IP) addresses. The first step taken was to develop a program which would generate random IP addresses, test the address for validity, and store resulting valid IP addresses in a file. This would enable us to resolve the domain name and then manually enter the valid domain names into a Web browser for further evaluation and classification.

In the mid 1990's, nearly all web domain names were assigned a unique, non-ambiguous IP address, referred to as a 'static' IP address. Around 1999, the practice of assigning 'dynamic' IP addresses became more common due in part to the perceived diminishing supply of static or unique IP addresses. A dynamic IP address is assigned to a computer by a Dynamic Host Protocol Server (DHPS) each time the computer connects to the Internet. The computer retains a dynamic IP address only for as long as a given Internet session lasts. The same computer might be assigned a completely different address the next time it connects to the Internet. In contrast, a static IP address remains constant.

The result of this trend toward greater usage of dynamic IP addresses is that an ever increasing number of IP addresses are essentially ambiguous, in that the IP address itself does not necessarily resolve back to the actual domain name it has been assigned, but may resolve back to the hosting Web site. The direct impact of this practice became apparent when we manually analyzed our initial randomly generated sample of 126 valid IP addresses. We categorized 68% of the sample as "business sites" (a number that was higher that we anticipated) and even more extraordinary, 80% of the business sites were sub-classified as information technology sites. At this point it was apparent that the seemingly skewed results were related to the IP addresses resolving back to the particular Internet host site which was generating the dynamic IP address for its users,

rather than the ultimate recipient site of the dynamic IP address. Edleman (2003) and Ricera (2004) also discuss the impact of the increasing proliferation of dynamic or shared IP addresses.

We explored various methods to generate random domain names as opposed to IP addresses. These attempts used text databases or extant search engine databases, but these attempts consistently resulted in severely and obviously biased samples. Our attention then turned to sampling by domain name zones, where we met with greater success.

SAMPLING BY TOP LEVEL DOMAIN

Choosing to sample by Top Level Domain (TLD) changed one aspect of the project. It would no longer consist of sampling the entire Web, but instead would attempt to sample by specific TLD, in this case the dot-com zone. The dot-com zone is the single largest TLD on the Web, accounting for about 46% of all registered domain names (VeriSign, 2005). It remains a preferred naming convention for business and other enterprises. The balance of the paper describes the process used to obtain a representative sample from the dot-com zone. VeriSign is the American company charged with managing both the dot-com and dot-net zones. VeriSign provides research access to the Zone Files through a relatively simple application and agreement process. The requirements at the time we registered included that the machine from which the access was to be conducted must have a static Internet Protocol address. Most universities employ static IP addresses on all campus machines. VeriSign Corporation granted us access to the data for research purposes on October 4, 2004. Along with the completed agreement, we received a File Transfer Protocol (FTP) address and an access password.

The next step was to use a FTP program to access the VeriSign Data Base. Once we connected to the VeriSign FTP address, we were able to select and download the entire dot-com data base file. VeriSign provides the databases as highly compressed zipped files. The size of the compressed dot-com file as downloaded on November 7, 2006 was 936 megabytes. Once the entire dot-com zone file was fully extracted the size was 4.30 gigabytes.

This new database represented the universe of dot-com names. However, the sheer number of records in the dot-com zone database (more than 40 million records) and the size of the files we were dealing with would prove difficult to manage and created data access issues. Many text reading files such as MS Word or MS NotePad were simply unable to load the files. Database enumeration proved to be problematic as well since applications which might easily have been used to enumerate records could not handle files of that magnitude.

CREATION OF THE SAMPLING POOL

To address the issue of sampling frame size, we developed a Java program (available upon request) which randomly extracted 50,000 domain names from the dot-com file. The program

required four parameters from the user. The file name of the dot.com zone file, the file name of the file to be extracted, a seed number, and finally the approximate record size of the file to be extracted (for example: 50,000). Based on pseudo random numbers seeded by the user, the would program read through the file, compare the pseudo random numbers to the file record number, extract records and create a sample of domain names of a more manageable size.

The resulting file of 50,000 domain names from the dot-com zone became our working database or 'sample pool' from which the final domain names could be drawn. We employed an editing tool (TextPad) to load the sample pool. This application included the capability to instantly enumerate each record (domain name) in the sample pool.

CREATION OF FINAL SAMPLE

We then generated an additional 1300 random numbers in the range of 1 to 50,000. These numbers were pasted to an Excel spreadsheet. These sets were used to select correspondingly numbered domain names from the enumerated sample pool in the TextPad file. This resulted in an Excel file of 1300 names drawn from the sample pool. Each record included the domain name and its associated number from the TextPad sample frame. This allowed us to cross check each record in the final Excel file with the associated record in the Random Number file and the TexPad enumerated sample pool.

The final task for our research purposes was to 'resolve' each of the 1300 domain names drawn. Domain name resolution is the process of typing or pasting a domain name into the browser address bar. Each of the 1300 domain names was resolved manually using a "copy and paste" process from our final Excel database to the browser address bar. This helped avoid typing errors in resolving the domain names, and still allowed individual evaluation and categorization of each site. Finally a new database was created which included all the domain names viewed and the results of the domain name, categorization process, i.e. was this an active site? Was it a business site? Did we encounter a 'Site not found' error message, and etc.

CONCLUSION

This paper suggested that in order to better understand the complex business systems emerging in World Wide Web further research from within the Web environment itself is required. Because of the size of the Web, sampling strategies must be employed in order to effectively model and study the Web business environment. We suggest that sampling the Web Top Level Domains offers a reasonable alternative for business researchers because it requires only familiarity with the use of the simple Web utilities such as File Transfer Protocols to obtain initial domain name listings. Domain names represent the fundamental building blocks of the Web. As such, every enterprise or individual seeking a presence on the Web must acquire at least one domain name. Closer

examination of domain name utilization leads us to a clearer of understanding of proportions and types of businesses using the internet and can help shed light on fundamental and as yet little understood questions.

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USING THE TRANSPARENCY INDEX TO CATEGORIZE EUROPEAN COUNTRIES

Peter J. Gordon, Southeast Missouri State University
Tori E. Patterson, The Magellan Exchange

ABSTRACT

Numerous criteria have been developed to cluster countries to enable multi-national companies to use similar strategies in countries that share similarities based on various criteria. The focus has been mainly at the consumer level. Using differing clustering criteria might be more appropriate for other corporate decisions. This paper develops a classification scheme based on transparency, which may be useful for classifying countries for legal compliance and political lobbying. By use of a "transparency index", this paper divides Europe into six regions, each with a distinctively different level of transparency.

INTRODUCTION

Corporations operating in diverse geographic areas typically use differing corporate strategies in different countries based on similarities and differences. Usually, efforts are made to clump countries together into sub-markets with common consumer characteristics or similar cultural backgrounds. However, corporations must also acknowledge that while one basis may be used for grouping countries together in order to create marketing efficiencies, different criteria might be necessary to develop strategies that are not directly related to consumer markets. In particular, this may be true in the areas of government relations, lobbying and contracting. Approaches to these activities need to be adapted to different country groupings.

Economic and demographic variables are often the most basic way of comparing and grouping countries. While such variables may identify the economic ability to purchase, by themselves they do an incomplete job of identifying similar and dissimilar markets. Culture based variables may do a better job of defining market opportunities and grouping countries together, where the same strategies may be used.

Possibly the most quoted cross-country cultural comparison is that of Geert Hofstede. Hofstede recognized that a comparison of various cultures could be done based upon five dimensions: power distance, individualism, masculinity, uncertainty avoidance and long-term orientation. These dimensions refer to expected social behavior, "man's search for the Truth," and importance of time (Keegan and Green, 2004).

Hofstede's first dimension, power distance, indicates the degree to which lower level members of society accept an uneven distribution of power. Individuals in some countries expect an unequal power distribution, while people in other cultures would be far less likely to accept this. The higher the power distance, the more hierarchical layers subordinates would have to go through to reach their upper-level supervisor (Keegan and Green, 2004).

Individualism, the second dimension in Hofstede's cultural typology, refers to the extent to which people in a society are individually minded. The people in individualist cultures tend to be primarily concerned with the interests of themselves and their immediate family, while those in a collectivist culture are more readily integrated into groups. The United States is very individualistic, while many Asian cultures fall into the collectivist category. Individualistic societies embrace individual achievements; however, in collectivist cultures groups or teams would be praised for achievements (Keegan and Green, 2004).

The third identified dimension is masculinity. Masculine societies tend to place men in assertive and ambitious roles, while women fulfill a nurturing role. Conversely, men and women's roles overlap in feminine cultures. Men in masculine cultures may have a difficult time respecting a woman in a business meeting (Keegan and Green, 2004).

Uncertainty avoidance refers to the extent of individuals' dislike for unclear or ambiguous situations. Some cultures are much more tolerant of uncertainty, while other countries require more structure and certainty. Low levels of uncertainty avoidance mean a society is more accepting of risk taking. Alternately, high levels would indicate to marketers the need for such things as warranties and no-hassle return policies to provide a higher comfort level of individuals (Keegan and Green, 2004).

Hofstede added the fifth dimension, long-term orientation, because certain dimensions of the Asian culture were not explained by his initial typology using four dimensions. Long-term orientation refers to a culture's sense of immediacy. Cultures with a short-term orientation favor immediate gratification while long-term oriented cultures are satisfied with a deferred gratification, which may also foster a slower pace of conducting business (Keegan and Green, 2004).

Sudhir Kale built on Hofstede's framework by identifying European countries using the first four dimensions - power distance, uncertainty avoidance, individualism and masculinity - and clustering them together by commonalities. He found that countries with small power distance, medium uncertainty avoidance, medium-high individualism and high masculinity prefer "high performance" products and favor marketing efforts that use a "successful-achiever" theme. The countries in this first cluster were Austria, Germany, Switzerland, Italy, Great Britain and Ireland.

Kale identified a second cluster as Belgium, France, Greece, Portugal, Spain and Turkey. This cluster exhibited the characteristics of medium power distance, strong uncertainty avoidance, varied individualism and low-medium masculinity. Marketing to the second cluster requires a status appeal, risk reduction and emphasis on product functionality.

The final cluster Kale identified reacted favorably to novelty and variety as well as environmentally and socially conscious companies and products. Denmark, Sweden, Finland, Netherlands and Norway fall into this third cluster. Each exhibited small power distance, low uncertainty avoidance, high individualism and low masculinity (Kale, 1995).

While the preceding discussion, and a variety of other methods, do provide a basis for utilizing the same marketing strategies in countries that are clustered together, they may not provide sufficient insight into the most effective methods for dealing with politicians, government bureaucracy, lobbying, bidding and a variety of non-governmental procedures and operations.

DEVELOPING CORRUPTION BASED CLUSTERS

Clustering countries may also be helpful in developing strategies to adjust corporate behavior to match the level of transparency and corruption in groups of countries. Although the Foreign Corrupt Practices Act (FCPA) prohibits US corporations from engaging in direct bribery (as does similar legislation in the European Union) anticipating the behaviors and motivations of various foreign officials and corporate bureaucrats one might encounter in the course of doing business may be a useful strategic tool.

Transparency may be defined as the existence of, and adherence to, publicly disseminated standards and procedures in the conduct of business and government. The greater the transparency, the less corruption exists. Transparency International (TI) is an international non-government coalition against corruption. Through surveys of business people, academics and risk analysts, TI develops a Corruption Perceptions Index (CorPI) score and ranks countries on the basis of these perceptions. The 2006 CorPI scores for the Top 20 countries, plus that of other European countries and selected "bordering countries" are shown in Table 1.

DIVIDING EUROPE ACCORDING TO THE TRANSPARENCY INDEX

Corporations attempt to group countries together, often based purely on geographic location. However, by incorporating the TI index, one can more meaningfully develop clusters of countries where a similar negotiation strategy may be employed. Using CorPI index data, this study divides countries into a number of segments with clearly different standards of corruption and transparency. The attempt here is to cluster countries not merely by geography, but to group them according to the integrity of their processes and level of corruption.

In order to illustrate this methodology, this paper has attempted to use the CorPI to divide Europe into a number of corruption based clusters. Lately much has been written about the "single market" that the European Union represents. While in economic terms the EU does present a single market, cultural differences between countries remains quite large. In particular, the level of

corruption and the transparency of procedures varies greatly. While this application has been limited to Europe, a similar technique can be utilized in other parts of the world.

Even a cursory examination of Table 1, along with a little geographic knowledge, would indicate that there are some clear trends when one tries to group European countries together. The most "transparent" group of countries would be the Nordic Europe group consisting of Finland, Iceland, Denmark, Sweden and Norway. These countries represented 5 of the top 8 slots on the CorPI index rankings - numbers 1, 2, 4, 6 and 8. The mean CorPI index for these countries was 9.34.

The next group of European countries could be broadly described as Anglo/Germanic Europe - Switzerland, Netherlands, Austria, United Kingdom, Germany and Ireland. These countries ranked 7, 9, 11, 11, 16 and 18. (Luxembourg, ranked 11th, could also be included in this group) The mean CorPI index for these countries was 8.4.

A third Euro group could be defined as Gallic. This small group of countries would include France and Belgium, ranking 18 and 20, with a mean CorPI index of 7.35. Arguably, Luxembourg could also be included in this group, as well as the Anglo/Germanic group.

A fourth group could be defined as the "Mediterranean/EU" group, which would include Spain (#23) Portugal (#26) Malta (#28) Italy (#45) Cyprus (#47) Greece (#54). Although not bordering the Mediterranean, Portugal is included in this grouping, due to its proximity and cultural similarity to Spain.   The mean CorPI index of this group is 5.78.

A fifth cluster would include the new EU members - the Baltics (Estonia (#24), Latvia (#49) and Lithuania (#46)), Poland (#61), Hungary (#41), Czech Republic (#46), Slovakia (#49) and Slovenia (#28). The mean CorPI score for these countries was 5.125.

Table 1: Transparency Index for Selected Countries*			
Country Rank	Country	2006 CorPI Score	Confidence range
1	Finland	9.6	9.4 - 9.7
1	Iceland	9.6	9.5 - 9.7
1	New Zealand	9.6	9.4 - 9.6
4	Denmark	9.5	9.4 - 9.6
5	Singapore	9.4	9.2 - 9.5
6	Sweden	9.2	9.0 - 9.3
7	Switzerland	9.1	8.9 - 9.2
8	Norway	8.8	8.4 - 9.1
9	Australia	8.7	8.3 - 9.0
9	Netherlands	8.7	8.3 - 9.0
11	Austria	8.6	8.2 - 8.9
11	Luxembourg	8.6	8.1 - 9.0

Table 1: Transparency Index for Selected Countries*			
Country Rank	Country	2006 CorPI Score	Confidence range
11	United Kingdom	8.6	8.2 - 8.9
14	Canada	8.5	8.0 - 8.9
15	Hong Kong	8.3	7.7 - 8.8
16	Germany	8.0	7.8 - 8.4
17	Japan	7.6	7.0 - 8.1
18	France	7.4	6.7 - 7.8
18	Ireland	7.4	6.7 - 7.9
20	Belgium	7.3	6.6 - 7.9
20	Chile	7.3	6.6 - 7.6
20	USA	7.3	6.6 - 7.8
23	Spain	6.8	6.3 - 7.2
24	Estonia	6.7	6.1 - 7.4
26	Portugal	6.6	5.9 - 7.3
28	Malta	6.4	5.4 - 7.3
28	Slovenia	6.4	5.7 - 7.0
37	Cyprus	5.6	5.2 - 5.9
41	Hungary	5.2	5.0 - 5.4
45	Italy	4.9	4.4 - 5.4
46	Czech Republic	4.8	4.4 - 5.2
46	Lithuania	4.8	4.2 - 5.6
49	Latvia	4.7	4.0 - 5.5
49	Slovakia	4.7	4.3 - 5.2
54	Greece	4.4	3.9 - 5.0
57	Bulgaria	4.0	3.4 - 4.8
60	Turkey	3.8	3.3 - 4.2
61	Poland	3.7	3.2 - 4.4
69	Croatia	3.4	3.1 - 3.7
79	Morocco	3.2	2.8 - 3.5
84	Romania	3.1	3.0 - 3.2
90	Serbia	3.0	2.7 - 3.3
93	Armenia	2.9	2.7 - 3.0
93	Bosnia and Herzegovina	2.9	2.7 - 3.1
99	Georgia	2.8	2.5 - 3.0

Table 1: Transparency Index for Selected Countries*			
Country Rank	Country	2006 CorPI Score	Confidence range
99	Ukraine	2.8	2.5 - 3.0
105	Macedonia	2.7	2.6 - 2.9
111	Albania	2.6	2.4 - 2.7
121	Russia	2.5	2.3 - 2.7
151	Belarus	2.1	1.9 - 2.2
*List includes the top 20 countries, other European countries and other countries which might be considered very long term prospects for membership of the EU, even though they fall (substantially) outside the geographic boundaries of Europe. Source: Transparency International, 2006			

Finally, a cluster could be described as "Developing Europe". This includes the former Soviet-influenced countries and newly emergent republics which aspire to join the European Union at some time in the future. For some, membership is likely relatively soon (Bulgaria (#57), Croatia (#69), Romania (#84) while for others, EU membership is a very distant prospect, such as for the remaining parts of former Yugoslavia (other than Croatia), Serbia (#90), Bosnia and Herzegovina (#93 - country now divided), Macedonia (#105); and the remaining European former-Soviet republics of Georgia (#99), Ukraine (#99) and Belarus (#151). Developing Europe has a mean CorPI score of 2.98.

Table 2: The Six "Europes"			
Cluster Number	Title	Mean TI	Countries
1	Nordic Europe	9.34	Finland, Iceland, Denmark, Sweden, Norway
2	Anglo/Germanic Europe	8.40	Switzerland, Netherlands, Austria, United Kingdom, Germany, Ireland
3	Gallic Europe	7.35	France, Belgium
4	Mediterranean/EU	5.78	Spain, Portugal, Malta, Italy, Cyprus, Greece
5	New EU	5.13	Estonia, Latvia, Lithuania, Poland, Hungary, Czech Republic, Slovakia, Slovenia
6	Developing Europe	2.98	Bulgaria, Croatia, Romania, Serbia, Bosnia-Herzegovina, Macedonia, Georgia, Ukraine, Belarus

Interestingly, while the ranking based on CorPI does bear some similarity to the ranking of countries based on per capita GDP, the differences are perhaps more striking than the similarities. (See table 3) Per Capita GDP data was obtained from the CIA World Factbook. While the CIA list does contain some internal inconsistencies, because the date of the information on each country

ranges from 2003 to 2005, and the distortion caused by exchange rate fluctuation, it is a broadly accepted comparative list. While higher GDP countries generally tend to be nearer to the top of the list and lower GDP countries tend to be lower on the list, grouping countries by GDP would result in significantly different grouping than does CorPI grouping. Therefore the use of an index for transparency might be a unique indicator of the way in which business is conducted and provide a good basis for developing negotiating guidelines according to CorPI groupings.

Table 3: Transparency Index Rank and Per Capita GDP Rank for Selected Countries*		
TI Country Rank	Country	Per Capita GDP Rank
1	Finland	22
1	Iceland	12
1	New Zealand	37
4	Denmark	13
5	Singapore	29
6	Sweden	26
7	Switzerland	18
8	Norway	6
9	Australia	19
9	Netherlands	23
11	Austria	17
11	Luxembourg	2
11	United Kingdom	25
14	Canada	16
15	Hong Kong	15
16	Germany	24
17	Japan	20
18	France	27
18	Ireland	8
20	Belgium	21
20	Chile	80
20	USA	7
23	Spain	36
24	Estonia	58
26	Portugal	56
28	Malta	55

Table 3: Transparency Index Rank and Per Capita GDP Rank for Selected Countries*		
TI Country Rank	Country	Per Capita GDP Rank
28	Slovenia	50
37	Cyprus	49
41	Hungary	62
45	Italy	28
46	Czech Republic	53
46	Lithuania	70
49	Latvia	71
49	Slovakia	63
54	Greece	45
57	Bulgaria	89
60	Turkey	95
61	Poland	73
69	Croatia	77
79	Morocco	145
84	Romania	101
90	Serbia	142
93	Armenia	133
93	Bosnia and Herzegovina	130
99	Georgia	157
99	Ukraine	115
105	Macedonia	105
111	Albania	129
121	Russia	84
151	Belarus	102

*List includes the top 20 countries, other European countries and other countries which might be considered very long term prospects for membership of the EU, even though they fall (substantially) outside the geographic boundaries of Europe.

Sources: Transparency International, 2006; CIA World Factbook (update 12 December, 2006)

CONCLUSIONS

This paper uses Transparency International's Corruption Perceptions Index to segment Europe into six distinct areas. Multi-national corporations may find such a grouping of countries

useful in developing negotiation strategies with purchasing and sales agents and in dealings with government officials. The Nordic group of countries tends to have the highest level of transparency, while the former Soviet influenced areas that have yet to join the European Union exhibit the least transparent processes.

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INTERNATIONAL EXERCISE TO INCREASE AWARENESS OF CROSS-CULTURAL ISSUES BY U.S. NEGOTIATORS

Timothy C. Johnston, Murray State University
Jay B. Burton, The University of Tennessee at Martin

ABSTRACT

A negotiation exercise can provide simulated "experience" at low cost. One can become oriented to the cross-culture negotiation process without the risk of making costly business errors, damaging relations, or missing opportunities. Although a negotiation exercise does not make one a veteran international negotiator, it may teach enough that a person could avoid a costly and embarrassing rookie failure. In an exploratory study, Americans (Unites States of America) were more aware of culture and its effect on negotiation following a negotiation exercise with Brazilians. They also reported that the negotiation exercise was an effective way to illustrate the effects of culture on the negotiation process. Instructors who use a negotiation exercise effectively can expect a positive response from the participants, as American participants reported that the negotiation experience was pleasant and time well spent. Instructors who wish to use a cross-culture negotiation exercise should benefit from the instructor and student perspectives given in this paper. Observations about the exercise and suggestions for future research are discussed.

INTRODUCTION

In a role-play negotiation exercise, students are faced with a business problem, with constraints and goals. The participants assume the roles of decision makers, and address the problem from the point-of-view of their role. The output of the role-play exercise is the product of the interaction between the "players," such as a negotiated agreement or "signed" contract.

The simulation of business activities, as defined by the American Assembly of Collegiate Schools of Business (AACSB) Task Force is, "a business curriculum-related endeavor which is interactive (other than between teacher and pupil) and is characterized by variability and uncertainty" (Gentry, 1990, p. 10). This pedagogy provides an active learning environment versus a passive one (Graham & Gray, 1969). The purposes of such an environment vary, but could focus on enhancing the learning environment (Lamont, 2001) and conveying knowledge that one could not attain elsewhere (Goosen, Jensen, and Wells, 2001).

The use of a negotiation exercise expands both teaching and learning options available to instructors and students. It does so by giving the students the "experience" and then the opportunity

for reflection upon the experience once completed (Kolb, 1984).   Such techniques are used to conduct experiments and provide "real world" experience at a low cost. These techniques when used effectively are excellent tools for preparing students.

The environment of a simulation exercise is one of uncertainty and less than perfect information. This is the type of environment that students will be faced with once they reach the "real world" (Karns 1993; Wellington and Faria, 1996). Therefore, simulation exercises are to business classes what labs are to Chemistry or Biology classes. They create a semi-realistic place where students apply knowledge and put into practice what they have learned. Furthermore, it allows them to see results of decisions they've made (Frank, 1993), which gives them a sense of ownership of knowledge and turns abstract ideas and theory into practical experience.

The interest in using simulated business exercises in teaching has been growing in popularity throughout the world, including the United Kingdom (Burgess, 1991), Australia (McKenna, 1991), and Germany (Rohn, 1986).   Its popularity has also increased across various cultures, including both socialist (Asa, 1982) and post-socialist (Wolfe 1993) nations. A simulated environment gives participants an arena in which to learn about decision-making, social interaction, and various other "real-life" skills, relevant to the subject matter.

DESCRIPTION OF THE EXERCISE

The negotiation exercise was adapted from Cateora & Graham (2007a, 2007b). This is a simulated negotiation between a U. S. manufacturer (General Medical) of magnetic resonance imaging (MRI) machines and a Brazilian hospital (Corcovado). The exercise was designed for use with Americans (United States of America) on both sides of the negotiating table, so modifications were made to use the exercise in a cross-cultural setting.

First, the instructions for the Brazilian roles, purchasing objectives, and price quote were translated into Portuguese. Second, the Brazilian "cultural/behavioral instructions" were deleted; these were originally written so that Americans could "play" the Brazilian roles and were deemed unnecessary. Finally, the prices in the Brazilian team purchasing objectives were changed to reflect currency rates.

The Brazilian team price objective for the basic MRI unit was set at a level of reais (the Brazilian currency) to convert to about U$750,000. The price quote from the U. S. team for the basic unit was U$1,200,000. The U. S. team price quote of U$1,200,000 and the Brazilian price objective of about U$750,000 left a gap of about $450,000. It was a significant challenge for the groups to find a point of overlap in this gap between prices, and in hindsight a gap of about U$200,000 would have yielded less frustration in the negotiation process.

The U. S. team consists of three roles: Sales Representative, Regional Sales Manager, and Product Sales Specialist of General Medical. The members of the team had different information and conflicting goals. The Sales Representative wanted to sell the basic unit, to earn a commission.

The Regional Sales Manager wanted to make the sale, but was constrained by headquarters to limit the price concession, avoid an arbitration clause, and avoid a contract in reais. The Product Sales Specialist wanted to sell options to the basic unit, and to sell a service contract that would cover technical problems with the equipment.

The Brazilian team also has three roles: Radiology Department Manager, Chief Radiologist, and Chief Financial Officer (CFO) of Corcovado hospital. The Radiology Department Manager was reluctant to commit much to a new vendor and equipment, because he or she would be responsible for the machine's operating success or lack thereof. The Chief Radiologist, however, wanted to buy two machines. The Chief Financial Officer wanted a contract with a lower price than the quote, with an arbitration clause, and stated in reais.

The presentation was divided into three sessions. In session one, the Brazilians were introduced to the exercise. The Brazilians had diverse level of English speaking ability; some spoke English well while others understood little and spoke almost none. The participants nominated people with better English skills to take the role of the Corcovado CFO. The remaining participants were given the instructions for the Radiology Department Manager and Chief Radiologist.

The U. S. team did not meet in a session one. The Americans who got their instructions 30 minutes before the negotiation exercise, as compared to the Brazilians who received their role instructions one day prior to the negotiation exercise. This was done to offset the Brazilian handicap of negotiating in English. The Brazilians were not combined into teams, and were instructed not to share their role instructions with other participants. The participants were introduced to Hofstede's cultural measures to illustrate differences between cultures. No instruction on cross-cultural negotiation was given.

The negotiation exercise was conducted during the second session. The Brazilians were then assigned to teams, and met at round tables to plan their strategy. The Americans were also assigned to teams, and sent to another location to read their role instructions and plan their team strategy. The teams met together at the Brazilian's table after 30 minutes. Each participant wore a name badge that identified his or her role. Very little technical information about the MRI machine was given, although each team received a color photo of a typical MRI machine.

The participants were told the exchange rate, and were given the following instructions in addition to their roles: "Read the instructions for your role. You have information that others on your team do not have. Reveal this information during your discussions. Do not tell anyone your information "verbatim" (word-for-word) or let anyone read your instructions. The exercise is complete at the end of 60 minutes or when both teams sign the final contract form (the GMI sales representative has the form). The negotiation may end without a signed contract if the parties do not agree, which is OK. The purpose of the exercise is not to compare outcomes, but to learn about the cross-cultural negotiation process."

After one hour, the negotiations were ended and a "debriefing" session was held. During the debriefing, participants commented on the breakthroughs in the process that led to completed

contracts, and to items that caused the teams to have deadlocks. Brazilians were asked, as homework, to reflect on the strengths and weaknesses of their team, and those of their American counterparts.

INSTRUCTOR'S PERSPECTIVE

As the instructor, I was satisfied with the experience of using a negotiation exercise. My goal in using a simulation exercise was to teach cross-cultural negotiation skills with an active learning method. The negotiation exercise helped me to meet this goal.

Two benefits of the exercise were (1) it taught participants both negotiation skills and cross-culture issues, and (2) it engaged participants in the learning process. The main benefit of the exercise was its integration of negotiation and cross-cultural issues. I chose to provide the simulated negotiation experience first, and then teach about negotiation and cultural differences. Participants tried to negotiate an agreement with another team from a different culture and with different goals. This was a vivid experience. They also experienced the challenges and frustrations of dealing with people from another culture, and trying to understand their language, negotiating style, and business culture. These (simulated) real-life experiences raised questions in the participants' minds for which the debriefing lecture had answers. The exercise, coupled with the debriefing, effectively integrated the learning of negotiation skills in a cross-cultural context.

The second benefit of the exercise was it engaged participants in an active way. The American volunteers were attracted to participate in the exercise by the prospect of interacting with Brazilians. An offer to hear a straight lecture on cross-cultural negotiation would not have been as attractive.

The Brazilians were especially served by the active learning method. Many Brazilian participants had limited English language skills, which handicapped the lecture method of teaching. A sound system was used to transmit the instructor's lecture to a person in a sound booth, who translated the English into Portuguese and transmitted to the headphones of the participants. I lectured as a supplement to the exercise, in the preparation and debriefing sessions.

Each participant revealed important information as part of his or her role in the exercise. I compared the negotiation exercise to a murder mystery game, where each player reveals his or her information "in character" at the appropriate time, to help solve a simulated crime. Each Brazilian was responsible for pursuing his or her private goals, regardless of English skills. This prompted everyone to participate.

I chose the negotiation exercise to provide an intense, interactive learning experience in a limited time. The exercise took only two hours. I felt that a longer time would have discouraged the participation of American volunteers (this would not be a concern if the exercise was part of a class requirement). Also, the Brazilians received only six hours of International Marketing

instruction in their program. I felt that the exercise and debriefing made a much bigger impact than lecture (direct instruction) alone.

The drawback of the negotiation exercise was preparation time. First, I arranged for the instructions and role descriptions to be translated from English to Portuguese. Second, all documents, signs, name badges, etc. had to be prepared beforehand, for quick deployment during the "one-shot" negotiation session. Third, I had to prepare lecture notes and slides in a concise way so that I could conduct the debriefing in less than 30 minutes. Finally, I recruited American volunteers over several days with many email and telephone contacts.

Overall, the learning benefits of the negotiation exercise outweighed the costs of preparation. Participants received an intense, vivid experience with cross-culture negotiation in a brief time period. The exercise effectively taught a diverse group of participants, including Brazilian and American graduate students and American "adult learner" professors. As an instructor, I was gratified by the positive comments of the participants. The data support my belief that the participants received a good value for their time and/or money investment in learning.

STUDENT'S PERSPECTIVE

As a student, I thought the exercise was a good experience. I was able to glean a lot from being involved in the exercise. When we arrived we were formed into groups of three and each given the instructions for the assigned role. We then took time to become acclimated with the process and discuss objectives as a group. During this time, it became evident that even the individual team members had different agendas. We then made calculations and discussed various aspects of the negotiation process ranging from how much we were willing to reduce the price to futures markets for exchange rates.

After we had finished discussing objectives and procedures the negotiations began. There were three "players," on the opposite team. After the initial introductions we didn't waste much time getting down to business. We gave them our initial price and they came back with a much lower offer. At that point we were a little dumbfounded. They each had their roles with each role having specific agendas, which were in conflict to some degree with each other and also with us. We then came back with a counter offer, and they came back with a little better offer, but not much. It was back and forth like this right up until the end when we were finally able to come to an agreement. They were tough negotiators. If I had to come up with one word to describe the negotiation process it would be intense. All the groups participated actively and had a great time.

After the exercise I was able to eat lunch with a couple of the Brazilian women and talk to them about their experience. They said they really enjoyed the exercise and that out of all the seminars they had been involved in, the negotiation exercise was definitely their favorite. I think both groups (Brazilians and Americans) would agree that it was an interesting and beneficial way

to learn. It was great being exposed to another culture and getting to experience what negotiations would be like in that culture.

The time constraint and the physical setting were both negative factors. Being that we only had two hours for the entire process, this didn't leave much time for small talk. The negotiation was very fast paced. As far as the physical setting is concerned, the large room in which the teams negotiated was very noisy and distracting.

Overall it was a great experience and I would love to have the opportunity to be involved in something like it again. This was pretty much the consensus of everyone involved. I would strongly encourage other professors to use a simulation exercise as a teaching tool. I learned a great deal about another culture as well as about negotiating. It was time well spent.
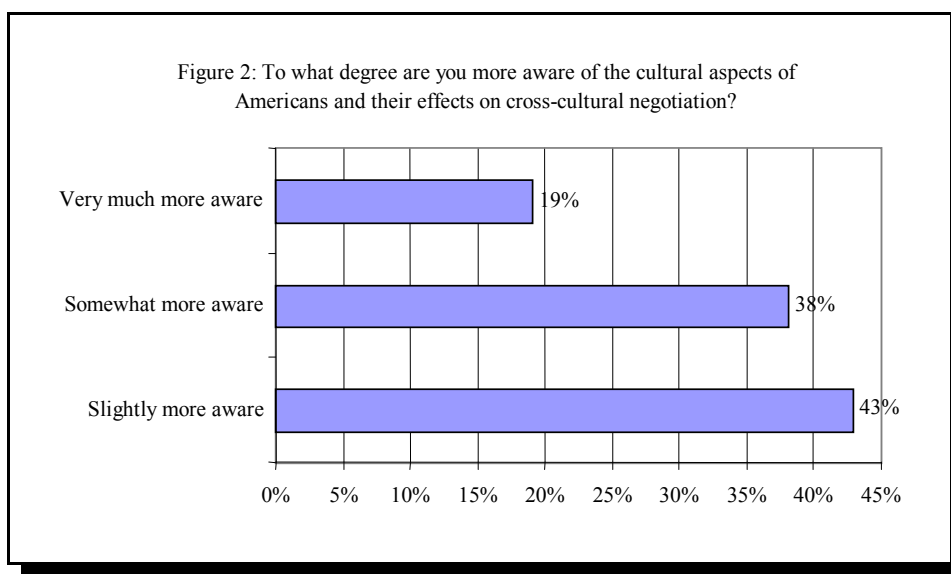
FINDINGS

A survey was distributed to the American (United States of America) participants (two copies, by mail and email) four days after the event. This, plus a follow-up mailing was sent eleven days after the event, yielded a 96% response rate. The instrument consisted of six questions, each with four responses on a Likert-type scale. One open ended question asked: "How could the exercise be improved for future applications?" Subjects were not asked to reveal their names. The Brazilians participated in a different study, so they were not asked to evaluate the teaching effectiveness of the negotiation exercise. The response data for each question are discussed below.

American participants were asked: "To what degree are you more aware of the differences between Brazilians and Americans and their effects on cross-cultural negotiation?" Over half (53%) reported being "very much" or "somewhat" more aware of cross-cultural differences.

Figure 1: To what degree are you more aware of the differences between Brazilians and Americans and their effects on cross-cultural negotiation?

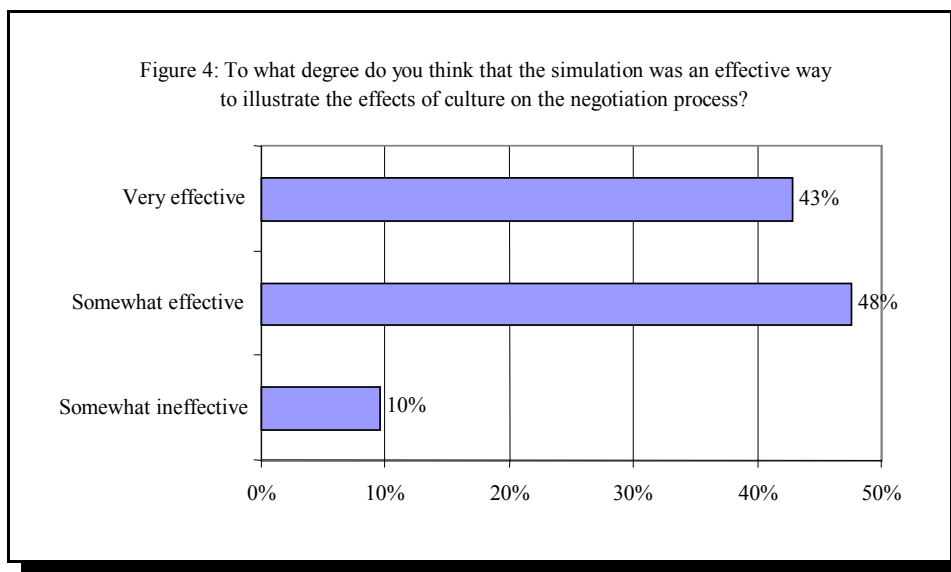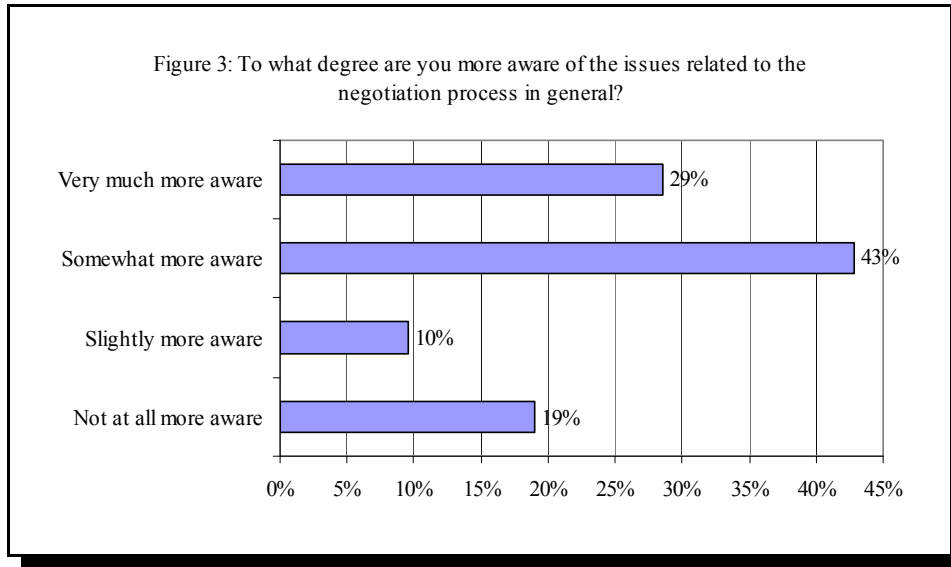| Category	Percentage
Very much more aware	24%
Somewhat more aware	29%
Slightly more aware	43%
Not at all more aware	5%
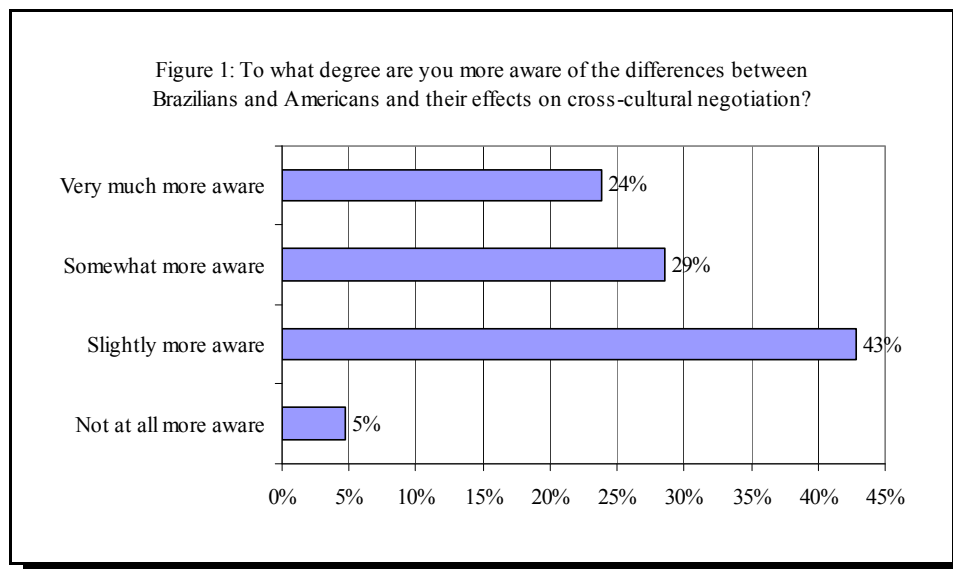
To the question: "To what degree are you more aware of the cultural aspects of Americans and their effects on cross-cultural negotiation?" (57%) reported being "very much" or "somewhat" more aware of the cultural aspects of Americans. This question was intended to reveal how much Americans learned about themselves from the exercise. For 43% of the group the answer was effectively, "not much."

Figure 2: To what degree are you more aware of the cultural aspects of Americans and their effects on cross-cultural negotiation?

|	
Very much more aware	19%
Somewhat more aware	38%
Slightly more aware	43%

Results for the first two questions were discouraging. It is troubling that almost half (47%) reported being "not at all" or only "slightly more aware" of differences between American and Brazilians. Equally discouraging is the finding that 43% of the Americans were only slightly more aware of their own culture and its effects on negotiation. The written comments of the people who responded with low ratings for these questions revealed the following. First, participants were frustrated with the time constraint. They felt that for the exercise to be more "real," more time was needed to prepare for and participate in the negotiation exercise. One person wrote "a three-member team observed for one hour is insufficient input to draw any 'cultural' characteristics into focus" and "in a real negotiation any time frame less than two days would probably be an exercise in frustration for everyone involved." Three participants suggested a "get-together" with the Brazilians, such as a reception, lunch or dinner, to become acquainted and develop some basis for a relationship.

Participants were much more positive in responding to questions about the "negotiation process in general" and the "effects of culture on the negotiation process." When asked: "To what degree are you more aware of the issues related to the negotiation process in general, independent of cultural issues?" 72% responded as "somewhat" or "very much" more aware. When asked: "To what degree do you think that the exercise was an effective way to illustrate the effects of culture on the negotiation process?," 91% responded "somewhat" or "very" effective.

Figure 3: To what degree are you more aware of the issues related to the negotiation process in general?

Category	Percentage
Very much more aware	29%
Somewhat more aware	43%
Slightly more aware	10%
Not at all more aware	19%

Figure 4: To what degree do you think that the simulation was an effective way to illustrate the effects of culture on the negotiation process?

Category	Percentage
Very effective	43%
Somewhat effective	48%
Somewhat ineffective	10%

Respondents were most positive in rating their overall experience. When asked: "Overall, how pleasant or unpleasant was your experience with the negotiation exercise?" 100% rated their experience as "somewhat" or "very" pleasant. When asked: "To what degree do you consider the time that you took to participate in the exercise as a waste of time or as time well spent?" again 100% considered their time as "somewhat" or "very much" time well spent.

Figure 5: Overall, how pleasant or unpleasant was your experience with the negotiation simulation?

Very pleasant	71%
Somewhat pleasant	29%

0% 10% 20% 30% 40% 50% 60% 70% 80%

Figure 6: To what degree do you consider the time that you took to participate in the simulation as a waste of time or as time well spent?

Very much time well spent	62%
Somewhat as time well spent	38%

0% 10% 20% 30% 40% 50% 60% 70%
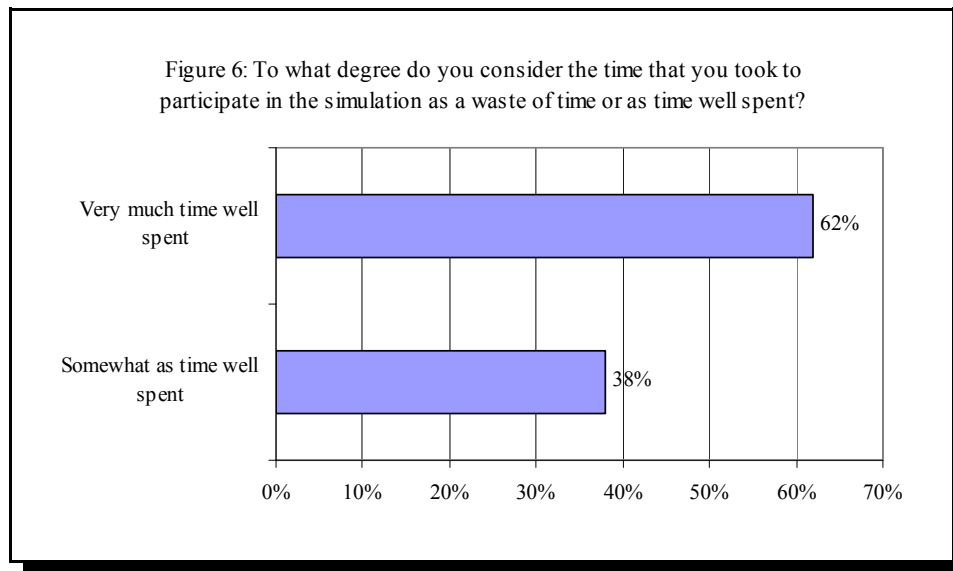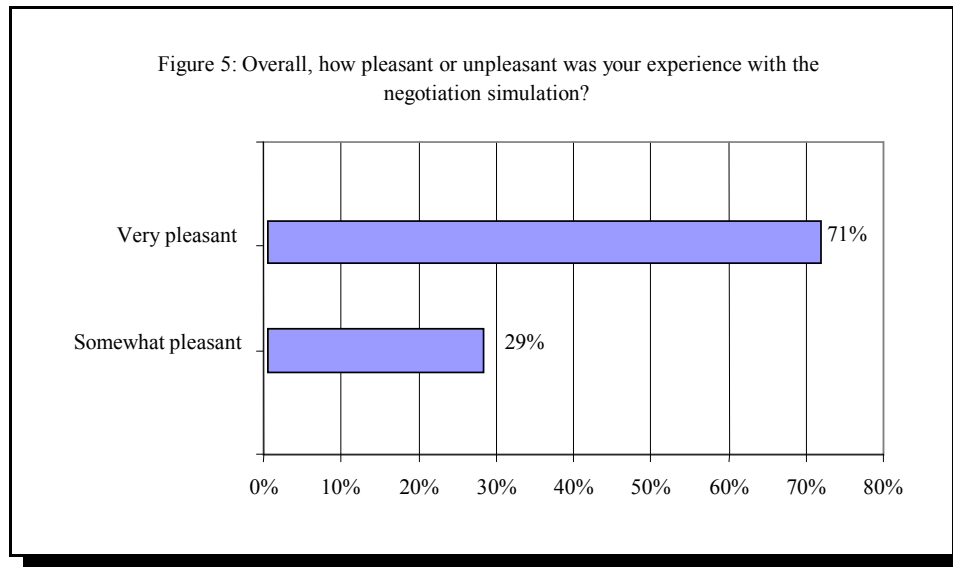
Participants felt they would have benefited from more technical understanding of the product (MRI machine). They felt that their lack of preparation or professional background hampered their effectiveness. Several "thank-you" comments were among the responses to the open-ended questions. Participants were grateful for the opportunity to participate in a novel, lively activity with Brazilian people. This was in spite of the shortcomings noted above and the expressed desire for more preparation and interaction.

CONCLUSIONS

This research describes the use of a negotiation exercise with Brazilians and Americans. In an exploratory study, Americans were more aware of culture and its effect on negotiation following a negotiation exercise with an equal number of Brazilians. The lessons learned may be applied to other cross-culture contexts, such as American-Japanese or American-Russian negotiations. Instructors who wish to use a cross-culture negotiation exercise should benefit from the instructor and student perspectives given in this paper.

Americans reported being more aware of Brazilian culture and its effect on negotiation after participating in the exercise. They also reported that their time was well spent and the experience pleasant. Instructors who use a negotiation exercise effectively can expect a positive response from the participants. This research was limited by a small sample size, and hence is only exploratory in nature. Did the Brazilians have an equally productive time as the Americans? The authors' impressions say "yes" but no data supports them.

Future participants would benefit from more preparation, more interaction with their other-culture counterparts, and more opportunity to discuss and reflect on their learning. One suggestion is to give the instructions to the Americans in advance, too. This will allow the Americans more time to prepare and become better equipped to play their roles. Teams could still be formed just prior to the negotiation to foreclose on the possibility that teams could plan their strategies ahead of time and create an unfair advantage. This may satisfy the individuals who felt unprepared to negotiate. Unfortunately, there is a tradeoff between having a two-hour event with an ample supply of volunteers, and having an expanded program to which some prospective participants would be unwilling to commit.

Another suggestion is to plan an optional reception after the exercise. People who desire more interaction and informal discussion could stay for the reception, while those with no desire or time could leave. A meal or refreshments could offer further opportunities for the Americans to develop real relationships with their Brazilian counterparts.

FUTURE RESEARCH

A simulation exercise provides "experience" at low cost. One can become oriented to the cross-culture negotiation process without the risk of making costly business errors, damaging relations, or missing opportunities. Although a negotiation exercise does not make one a veteran international negotiator, it may teach enough that a person could avoid a costly and embarrassing rookie failure.

To what extent do multinational corporations provide negotiation training to their employees? An overview of the corporate uses of cross-culture negotiation exercises would be

useful knowledge. Ford, for example, conducts extensive training for employees who are slated to work in Japan (Hodgson, Sano & Graham, 2000, p. 81).

How efficient are exercises at varying degrees of "realness"-from negotiating with other Americans pretending to be foreigners, to negotiating with foreign visitors (like this study), to an in-country exercise, to serving as an observer in a real cross-culture negotiation? Research is needed to show how far removed from reality a negotiation exercise can be and still be effective at changing attitudes.

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CULTURAL DIFFERENCES IN TELEVISION CELEBRITY USE IN THE UNITED STATES AND LEBANON

Morris Kalliny, Missouri University of Science and Technology
Abdul-Rahman Beydoun, Florida International University
Anshu Saran, University of Texas of the Permian Basin
Lance Gentry, Missouri University of Science and Technology

ABSTRACT

Jagdish and Kamakura (1995) argued that celebrity endorsement has become a prevalent form of advertising in the United States. Approximately 20% of all television commercials feature a famous person, and approximately 10% of the dollars spent on television advertising are used in celebrity endorsement advertisements (Advertising Age 1987; Sherman 1985). The purpose of this study is to compare the use of celebrity endorsement between the United Sates and Lebanon in terms of two fundamental cultural dimensions: 1) low versus high context, and 2) individualism versus collectivism. This study investigates differences and similarities regarding celebrity characteristics in the U.S. and Lebanon.

INTRODUCTION

Jagdish and Kamakura (1995) argued that celebrity endorsement has become a prevalent form of advertising in the United States. Approximately 20% of all television commercials feature a famous person, and approximately 10% of the dollars spent on television advertising are used in celebrity endorsement advertisements (Advertising Age 1987; Sherman 1985). Schickel (1985) stated that American society is fascinated with celebrities and individuals from various fields such as, politics, sports, entertainment, business, fashion, and others are often elevated to celebrity status. Shimp (2000) estimated that around one-quarter of all commercials screened in the United States include celebrity endorsers. Celebrities have been able to generate millions of dollars in endorsement deals to appear in advertisements. Erdogan (1999) postulated that companies invest large sums of money to align their brands and themselves with endorsers. For example, Nike signed a $100 million, five-year contract with Tiger Woods for his endorsements (Choi et al. 2005).

There are several reasons for the extensive use of celebrities in advertising. Research findings show that celebrities make advertisements believable (Kamins et al., 1989), enhance message recall (Friedman and Friedman 1979), aid in the recognition of brand names (Petty,

Cacioppo, and Schumann 1983), create a positive attitude towards the brand (Kamins et al. 1989), and create a distinct personality for the endorsed brand (McCracken 1989). Because it is believed that celebrity endorsements are likely to generate a greater likelihood of customers choosing the endorsed brand (Heath, McCarthy, and Mothersbaugh 1994; Kahle and Homer 1985), business are willing to pay high prices to obtain it.

Choi, Lee and Kim (2005) argued that the celebrity phenomenon is not limited to the United Sates and appears to be universal. In spite of the universality of this phenomenon, Choi et al. (2005. p. 85) state, "No research to date has empirically examined the assumption that the celebrity endorsement strategy is used in a similar fashion from country to country, or that consumers around the world respond to it in a similar way." Most of the celebrity research that has been conducted has been about the United States. We believe that in order to develop a general understanding of such a universal phenomenon, research efforts must be broadened to cover more parts of the world.

The Arab world is one of the regions historically ignored in advertising research. Abernethy and Franke (1996) found 40 out of 59 content analysis studies dealt with the United States media and concluded, "Much less is known about advertising information in other countries. For example, no study has examined the advertising information in any African nation, any part of the Middle East other than Saudi Arabia, or any of the 'economies in transition' associated with the former USSR" (p. 15). Elbashier & Nicholls (1983, p. 68) stated that, "it is perhaps somewhat surprising that academics have not gone further and attempted to examine the impact of cultural differences in Arab countries on Marketing, as there is a considerable field of literature suggesting that several aspects of "the marketing mix" are culturally sensitive". In response to this, the purpose of this study is to compare the use of celebrity endorsement between the United Sates and Lebanon in terms of two fundamental cultural dimensions: 1) low versus high context, and 2) individualism versus collectivism. This study will investigate differences and similarities regarding celebrity characteristics in the U.S. and Lebanon.

CELEBRITY AND CELEBRITY ENDORSEMENTS IN THE ARAB WORLD

The appearance of celebrity in advertising dates back to the late nineteenth century (Choi et al. 2005). As stated previously, the celebrity phenomenon is not limited to the United Sates and appears to be universal (Choi et al. 2005). The universality of the phenomenon lies in the fact that each country has its own celebrities that seem to enjoy fame and recognition. The advancement of technology had enabled people to be more connected and aware of what others do than ever before. For example, in recent years and months the Arab world has been introduced to a variety of reality television shows that were imitation of shows aired in the United Sates and Britain. Previously, such shows were unheard of in the Arab world because such shows seem to cross cultural and religious boundaries and that is why some of these shows were taken of air shortly after they were introduced (BBC News, 2005).

Although celebrity fascination takes place in the Arab world, it is likely that the way people react to celebrity is different from the way people do in the U.S. due to religious and cultural factors. In spite of these cultural and religious values; however, Arab fascination with celebrity has recently increased due to more exposure to the West and particularly the United States. For example, BBC News (2005) reported that "a Saudi star of a reality TV show caused such commotion among fans in a Riyadh mall he was reportedly arrested for sparking an "indecent scene." Saudi fans tried to hug and kiss the star which is against religious and cultural values of the kingdom. This is not to say that Arabs are not fascinated with celebrity. BBC News (1970) reported that about 3 million people attend the funeral of Abdel Nasser (the former president of Egypt). More recently, BBC News (2005) reported that thousands of people attended the funeral of the Egyptian actor, Ahmad Zaki, who was covered in the Egyptian flag to honor him. Finally, NPR (2005) reported that hundred of thousands attended the funeral of former Prime Minister Rafik Hariri in downtown Beirut. Abdel Halim Hafez's funeral (one of the most famous singers in Egypt during the 1960s and 1970s attracted more than a 100 thousand people when he died in 1977. These are a few examples that illustrate the fascination of the Arab world with celebrities.

The previous literature indicates that Arabs provide celebrities with much more attention than regular citizens. Local and giant international companies have utilized Arab celebrities in advertising. During the 1980s, local football (soccer) star Mahmoud El-Khattib promoted razors, actress Sahar Ramy endorsed hair dye and actor Hassan Abdeen promoted soft drinks (American Chamber of Commerce in Egypt). The American Chamber of Commerce in Egypt also reported that as celebrity use has grown so too have their paychecks. While unconfirmed, superstars such as Amr Diab (a singer from Egypt) and Nawal Al Zoghby (a singer from Lebanon) may be paid over $1.1 million (approximately 6.3 million Egyptian pounds) for appearances in television commercials. Because the phenomenon of using celebrity to endorse products is increasing in the Arab world, it is important that this phenomenon be understood. As a starting point, this study focus on celebrity characteristics in Lebanon and the cultural values they manifest in television commercials. It is hoped that this study serves as a guide for future research dealing with advertising in general and television advertising in particular. It is also our hope that this study although deals with only one Arab country, it will increase interest to investigate various regions and countries in the Arab world and the Middle East. The rest of the paper is organized as follows: the cultural differences between the United Sates and Lebanon in which we discuss tow main cultural dimensions, low and high context and collectivism/individualism, followed by a section dealing with research questions and hypotheses, then the methodology and results.

CULTURAL DIFFERENCES IN ADVERTISING CONTENT

McCarty and Hattwick (1992) argued that culture impacts every aspect of a society including the thinking and acting of every member of a group. Thus culture has long been considered to have

a significant influence on international advertising strategy (e.g. Albaum and Peterson 1984; Britt 1974; Donnelly 1970; Douglas and Dubois 1977; Harvey 1993; Kanso 1992; Mueller 1992; Onkvisit and Shaw 1987). Srikandath (1991) referred to cultural values as the governing ideas and guiding principles for thought and action in a given society. Therefore, cultural values are important variables in advertising research. Advertisements are the richest and most faithful daily reflections that any culture ever made of its entire range of activities (McLuhan 1964). Schudson (1984) viewed advertising as a window to a given culture and a mirror that reflects culture. Frith (1997) argued that consumers understand advertising messages by relating them to culture. Tse, Belk and Zhou (1989) argued that cultural values conveyed through advertising messages are considered powerful forces shaping consumers' motivations, lifestyles, and product choice. Marketers must understand cultural values of a given society to be able to select effective and appropriate advertising messages. Thus cross-cultural studies are crucial in understanding different cultural values.

Frith and Frith (1989) found significant differences in key cultural values between Western and Eastern cultures reflected in advertising such as direct and indirect discourse, individualism and collectivism, horizontal and vertical identification of personal relationships, determinism and fatalism, and logical and intuitive problem-solving. The most common cultural values manifested in advertising include individualism-collectivism (Cheng & Schweitzer 1996; Lin 1993), high and low context cultures and language (Muller 1987), power distance (Sriram and Gpalakrishna 1991; Zandpour et al 1994), uncertainty avoidance (Sriram and Gpalakrishna 1991; Zandpour et al. 1994), and cultural preference for written versus oral communication (Unwin 1974).

Synodinos, Keown, & Jacobs (1989) studied advertising practices in 15 countries and found significant dissimilarities that were attributed to cultural differences. Kanso (1992) investigated the international advertising strategy of the largest fortune 500 corporations and suggested that advertising messages should fit the beliefs and traditions of the citizens in each country. Hornic (1980) found that, in most cases, an adaptive advertising strategy was followed when an American print advertisement for well-known American products was used in Israel. Graham, Kamins & Oetomo (1993) found Japanese and German companies to adapt their international advertisements to the foreign markets.

Lin (1993) argued that the Chinese Confucian influence in the Japanese culture orients its advertising toward respect for nature, tradition, and elders. Hong et al (1987) found Japanese magazine advertisements to include more emotional appeals and less comparative appeals than their American counterparts. Zhang and Gelb (1996) found American consumers prefer individualistic appeals while Chinese consumers prefer collectivistic appeals. They also found that a match between advertising appeals and cultural values to bring about more favorable attitudes toward the advertisement. Lenormand (1964) concluded that cultural differences such as religious beliefs, basic customs and living standards are too great to overcome.

The majority of cross-cultural advertising studies assume explicitly that culture is an antecedent to different advertising content and expressions (Al-Olayan & Karande 2000, Gilly 1988;

Hong et al 1987; Mueller 1992; Tansey et al 1990), and tremendous support has been reported for the culture-specific content of advertising. Pollay and Gallagher (1990) argued that cultural values are the core of advertising messages and typical advertisements reinforce cultural values. Finally, several empirical studies found that advertisements reflecting local cultural values are more persuasive than those that ignore them (Gregory and Munch 1997; Han and Shavitt 1994; Hong, Muderrisoghi and Zinkhan 1987; Madden, Cabellero and Matsukubu 1986).

The preceding literature indicates that there is a strong relationship between cultural values and advertising content. Cultural values play a central role in the advertising content and advertising content plays an integral role in transmitting and shaping cultural values. Therefore, the study of advertising content makes it possible for academic researchers to gain insight about the cultural values of a particular society. As cultural orientations and values differentially influence the content and style of advertising across countries, advertising techniques such as celebrity endorsement may vary accordingly. Therefore, understanding the varied use of celebrity endorsement techniques across cultures is critical.

CULTURAL DIFFERENCES AND CELEBRITY ENDORSEMENT

Every culture consists of complex web of religious and cultural values, languages and consumption attitudes that impact how communications are delivered and received. Erdogan (1999) argued that as mass media permit celebrity to move beyond their national markets and gain awareness and reputation in different countries, celebrity are believed to transcend national borders and overcome cultural barriers in global marketing communication. In order for this statement to be empirically evaluated and tested, cross cultural studies are desperately needed. This adds more value to our study which looks at two different cultures (the American and the Lebanese), which are vastly different from one another.

McCracken (1989) argued that the secret of the celebrity endorsement is largely cultural in nature and that the study of celebrity and endorsement is improved by a cultural perspective. Therefore; the selection of celebrity endorsers and the creative execution of advertising strategy may mirror the fundamental cultural orientations and values of the society where they are created (Choi et al. 2005). This is probably why several studies have shown that consumers are more inclined to respond to advertisements that are congruent with their culture (Boddewyn, Soehl and Picard 1986; Buzzell 1986; Harris 1984).

RESEARCH QUESTIONS

The current research seeks to investigate the use of celebrity in TV commercial endorsements. We seek to investigate not only the frequency of celebrity use in Lebanon and the

United States but also to compare celebrity characteristics used in each country. Therefore our first research question states:

RQ1: Which one of the two countries (U.S. or Lebanon) uses more celebrity in television advertising?

RQ2: What are the types and characteristics of celebrities appearing in Lebanese and U.S. television advertising?

Previous research (Forkan 1980; Friedman and Friedman 1979) suggests that the effective use of celebrity endorsers should depend greatly on product types. Friedman and Friedman (1979) argued that celebrities work best when endorsing products that are high in psychological and/or social risks. Choi et al. (2005, p.88) stated that, "Despite the potential variation of the use of celebrity endorsement among product types, previous research offers little information on similarities and differences across cultures in this regard," To fill this gap we seek to answer the following question:

RQ3: What are the product types for which celebrities are commonly employed as endorsers in Lebanese and U.S. television advertising?

RESEARCH HYPOTHESES

High/Low Context

Hall's 1976 theory of high versus low context culture has been used frequently to understand and explain cultural differences (see Adir 2003; Anwar & Chaker 2003; Britt 2000; Cho, Up Kwon, Gentry, Sunkyu & Kropp 1999; Hall & Hall 1989; Lin 1993; Miracle, Chang and Taylor 1992; Mintu-Wimsatt & Gassenheimer 2000; Mueller 1987). Hall (1976, p. 91) describes the difference between high and low context cultures as:

A high-context communication or message is one in which most of the information is either in the physical context or internalized in the person, while very little is in the coded, explicit, transmitted part of the message. A low context communication is just the opposite; i.e., the mass of the information is vested in the explicit code. Twins who have grown up together can and do communicate more economically than two lawyers in a courtroom during a trail.

The theory of low versus high context captures a culture's reliance on context in communication and information processing (Hall 1976). There are significant differences between high and low context cultures. Low context cultures tend to be clear, confrontational (Cutler and Javalgi 1992; Miracle et al 1992) and provide detailed information in their communication (Lin 1993). High context cultures rely primarily on non-verbal communication (Simintiras and Thomas

1998), often drawing conclusions from informal interactions and other non-verbal variables such as values, status, and associations (Keegan 1989).

Hall (1976) suggests that high-context culture would convey messages in an abstract, implicit, and indirect manner, and that meanings are interpreted based on the intuition and contemplation of the audience. Therefore, the communication style is embedded in the context of the message, and the listener must understand the contextual cues in order to interpret the meaning of the message. In the high context cultures, brevity of expression is desirable and speeches that have few words but carry a full meaning are considered to be the best speeches. Thus high context cultures do not require a great deal of information. In contrast, the low context cultures rely on clear verbal and unambiguous messages to communicate. Because the interpretation of the message is dependent on the explicit and unambiguous message, a great detail of information is required to achieve effective communication. The high context culture relies on the contextual cues while the low context cultures rely on words to communicate. These contextual cues include individual's background, social status, associations, and values.

The theory of high versus low context has been used extensively in advertising research. Effective communication in advertising and in advertising messages is crucial. Hall's theory allows marketers to choose the communication style that improves the effectiveness of the message. Line (1993) found advertisements in low-context cultures to be more informative compared to high-context cultures. Low-context cultures were found to use a hard-sell approach (Mueller 1987, 1992) and a direct and confrontational appeal (Cutler and Javalgi 1992) and stress breadth rather than depth brand image perceptions (Roth 1992). In contrast, advertisements in the high-context cultures use emotional appeals (Biswas et al 1992), use a more of a soft-sell approach (Cutler and Javalgi 1992) and stress depth brand image perceptions (Roth 1992).

The Arabic language is one of the richest languages in both context and code (Kanso 2001). The Arabic language holds a high place among the Muslim believers because it is the language of the Koran and the language used in prayers throughout the Muslim world. The Arab culture is high context, meaning the communication style is embedded in the context of the message, therefore the listener must understand the contextual cues in order to interpret the meaning of the message. Emotions are an important part of the Arab communication style (Anwar & Chaker 2003). In the Arab culture, although the language is rich with many adjectives per word, brevity of expression is desirable and speeches that have few words but carry a full meaning are considered to be the best speeches. The Arabic audience does not require a great deal of information from advertising or explicit details of the product being presented (Biswas et al 1992). Al-Olayan and Karande (2000) argued that because the Arabic society is a high collectivist, people do not depend as much on ads to get information about a product but rather use other sources such as extended family members, friends, etc.

On the other hand the American culture is low-context. U.S. customers rely more on direct communication. According to Biswas et al (1992) and Mueller (1987), because American consumers

are interested in more information and details, the American consumer seeks more information from ads. The American communication style requires clarity of communication which is evidenced by the many expressions such as: "Say what you mean," "Don't beat around the bush," and "Get to the point." Hall (1976, p.98) point out an interesting difference between high and low context cultures by stating:

People raised in high-context systems expect more from others than do the participants in low-context systems. When talking about something that they have on their minds, a high-context individual will expect his interlocutor to know what's bothering him, so that he doesn't have to be specific.

Hall (1976) pointed out that in high-context exchanges much of the burden of meaning fall on the audience, while in low-context cultures the burden falls on the speaker to accurately and thoroughly convey the meaning in the message. Al-Olayan and Karande (2000) found that Arabic magazine ads contained fewer information cues compared to American magazine ads. Lin (1993) and Mueller (1987) found ads in low-context cultures included more information than high-context cultures. Thus:

H1: Lebanese Celebrity will be more likely to convey less information compared to their U.S. counterparts due to the high context nature of the Lebanese culture.

Individualism/Collectivism

Traindis (2004) concluded that the dimension of individualism/collectivism is the most important dimension in studying culture. This dimension has extensively been used and investigated in many disciplines (Cukur, De Guzman & Gustavo 2004; Gudykunset et al 1996; Han and Shavitt 1994; McCarty and Hattwick 1992; Mueller 1987). Hofstede (1984, p. 225) defined individualism and collectivism based on the strength and breadth of ties between the individual and society. Perhaps the importance of this dimension stems from its ability to provide an objective assessment of culture, which is otherwise a fuzzy concept (Gouveia, Clemente & Espinosa 2003). This construct modeled the perceptions and behaviors of people in the individualistic culture differently from those in the collectivistic culture (Triandis, 2004). Hofstede (1984) described individualism as the assumption that individuals should take care of themselves. In collectivistic societies, people are integrated into strong and cohesive in-groups which care for them in exchange for a high degree of loyalty. Collectivists are more willing than individualists to sacrifice their personal goals for group's goals (Perea & Slater 1999). Additionally, social norms are very important in guiding the behavior of individuals in collectivist societies (Prior & Whalen 1997). In individualistic cultures, it is expected that people will try to gain attention for themselves and get credit for their achievements. In individualistic cultures, strong ties exist only with familiar others, while in collectivistic cultures; strong ties exist with a more diffuse group. A high individualism ranking indicates that individuality and individual rights are paramount within the society, while a low individualism ranking typifies

societies where the rights of the society are paramount. Thus, these cultures tend to be high in power distance. Uncertainty avoidance and collectivism also tend to covary with collectivistic cultures using relationships to avoid discord with peers and superiors and to reduce uncertainty (Tsai & Levinson 1997). Those from an individualistic society frequently question ethical standards established by their societies, while members in collectivist cultures tend to accept them (Singhapakdi & Rawas 1999). Individualistic cultures emphasize personal fate, personal achievement, and independence from the in-group (Perea and Slater 1999). Consumers in individualistic cultures place their own needs, desires and wants before those of the group (Perea and Slater 1999). In individualistic societies the individual is the center of attention and autonomy and self reliance are emphasized in these societies. Individuals in these societies are most likely to dislike being dependent on other people or having other people dependent on them.

A consumer who is living in a collectivistic society might be expected or required to adhere to what the group decides and not just to what he/she decides. The individual is expected to consider how a decision will impact not only his life but the lives of those around him. Thus, collectivism generally refers to: 1) society-centered orientation, 2) emphasis on sharing, cooperation, and group harmony, and 3) concern for group welfare. In contrast, individualism generally refers to: 1) self-centered orientation, 2) emphasis on self-sufficiency and control, and 3) emphasis on individual accomplishment. Advertisements in individualistic cultures are oriented toward individuality, independence, success and/or self-realization, and stress the benefits to one's own self. In contrast, advertisements in collectivistic cultures reflect interdependence, family integrity, group well-being, concern for others, and group goals (Belk and Bryce 1986; Han and Shavitt 1994; Miracle et al 1992; Mueller 1987).

Hofstede (1991) reported that the United States was the most individualistic country among the 53 countries analyzed, with a score of 91 on a 100-point scale. The Arab world; however, scored 38 on this individualistic dimension. Members of Arab culture have a high need for affiliation and value mutual dependence (Yousef, 1974). Success is measured by what one does for his family rather than individual earnings or achievement. Consequentially, loyalty to one's primary group is an integral part of Arab culture. This sense of loyalty is exemplified by this Arab proverb, "I against my brother; my brother and I against my cousins; I, my brother, and my cousins against the outsider" (Bates & Fratkin, 2003, p.272). The negative perception of outsiders is evidenced by the fact that Arab societies are not very culturally or racially diverse. Hofstede (2001) argued that the Arab culture is a collectivistic culture where members of the Arab society tend to depend on each other. Thus:

> H2: Lebanese celebrity will be more likely to employ collectivism appeals compared to their U.S. counterparts due to the collectivistic nature of the Lebanese celebrity.

METHODOLOGY

Sampling Procedure

A sample of 8 hours of programming was videotaped in the U.S. and Lebanon. The times chosen for taping were 8:00 p.m. to 10: 00 p.m. Monday-Thursday. The samples were collected during October 2005. Two guidelines were followed in selecting television channels to be taped: 1) the channel had to be broadcast nationwide, and 2) the network is accessed for free and no subscription of any kind is required. Based on these conditions LBC in Lebanon and CBS in the U.S were selected. 102 television advertisements were used from the U.S. and 106 from Lebanon.

Coding Procedure

Two graduate students coded the U.S. ads and two bilingual Lebanese students coded the Lebanese ads. All coders were trained prior to coding and were provided with a detailed description and operational definition of each coding category. The percentage of agreement among the coders was calculated. The number of times coders were in agreement was divided by the total number of ads coded. The inter-rater reliability was calculated using the percentage of similar classifications for all ads. All intercoder reliabilities were above 0.7.

RESULTS

The first research question was to examine whether the U.S. or Lebanon uses more celebrity advertising. To answer this question, frequencies of celebrity appearance was calculated. Data analysis revealed that 16 (15.1%) out of 106 commercials in Lebanon featured a celebrity compared to 13 (12.9%) out of 101 commercials in the U.S. featured a celebrity. It should be noted here that according to the World Factbook (2007), the population of Lebanon 3,925,502 is much smaller compared to 301,139,947 of the United States. This is also reflected in that the number of celerities in the U.S. is much larger compared to the number of celebrities in Lebanon which makes this finding even more significant. This indicates the heavily reliance of the Lebanese advertising media on the use of celebrity compared to the United States. It is possible that the reason for such reliance is the lower cost of using celebrities in Lebanon compared to the United States.

The second research question was to examine the celebrity endorser characteristics in the U.S. and Lebanon. Male and female celebrities appeared evenly in Lebanese television commercials, while U.S. commercials featured more female (66.6%) than male (33.3%). In the U.S. sample, ages of the celebrity ranged from teenagers to fifty or older. In the Lebanese sample, however; celebrity age ranged from twenties to fifty or older. Both countries appear to use celebrities in their twenties more than any other age. 56.3 % of the celebrities used in Lebanon were actors/actresses compared

to 28.6 % of the U.S. sample. Athletes (28.6%) were just as prevalent as actors/actresses in the U.S. sample, while athletic endorsements were much less common (6.3%) in the Lebanese sample.

The third question was to investigate which products employ celebrities in the U.S. and Lebanon. In the United States sample, cosmetics and hair care products were found to employ more celebrities than any other type of product in the sample. This is in line with Friedman and Friedman (1979) suggestion that celebrities work best when endorsing products that are high in psychological and/or social risks. In the Lebanese sample, celebrity's use varied among product types.

HYPOTHESES TESTING

Hypothesis 1 stated that Lebanese celebrities will be more likely to convey less information compared to their U.S. counterparts due to the high context nature of the Lebanese culture. To test hypothesis 1, a t-test was performed to assess the mean difference between the U.S. and Lebanon regarding information cues which included 14 categories (see table one for details). Collectively, there was no significant difference between information cues provided in the Lebanese sample and the U.S. sample. Contrary to what was expected; however, the Lebanese sample included significantly more information cues regarding price, quality, performance, components, company research and availability. Therefore, hypothesis 1 was not supported.

Hypothesis 2 stated that, Lebanese celebrity will be more likely to employ collectivistic appeals compared to their U.S. counterparts due to the collectivistic nature of the Lebanese celebrity. T-test showed that there was no significant difference between the 2 samples; therefore, hypothesis 2 was not supported.

CONCLUSION

The main purpose of this study was to compare the use of celebrity endorsement between the United Sates and Lebanon in terms of two fundamental cultural dimensions: 1) low versus high context, and 2) individualism versus collectivism. This paper is also an attempt to find out which country (USA or Lebanon) uses more celebrity and identify the characteristics of celebrities used and the products their use is associated with.

Although Lebanon has a population that is only about 1.3% of the population of the United States and has a much smaller number of celebrities compared to the United States, more celebrities appeared in the Lebanese sample compared to the U.S. sample. Although it is hard to accurately predict why this is so, we think that the cost of celebrity use might be a factor. There was no significant difference between the ratio of males verses females in U.S. and Lebanese samples.

In the United States sample, cosmetics and hair care products were found to employ more celebrities than any other type of product in the sample. This is in line with Friedman and Friedman (1979) suggestion that celebrities work best when endorsing products that are high in psychological

and/or social risks. This study reveals that advertising in Lebanon may not necessarily stick to the wide common cultural values of the Arabs. For example, the Arab culture is known for its high context but our sample did not reflect that. This could be due to the influence of the west particularly France on the Lebanese culture.

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JAPANESE MANAGERS' EARNINGS MANAGEMENT USING SEVERAL DIFFERENT TYPES OF RESERVE ACCOUNTS

Wikil Kwak, University of Nebraska at Omaha
Richard File, University of Nebraska at Omaha

ABSTRACT

This paper examines all reserve accounts together as well as each reserve account individually to understand Japanese managers' earnings management behavior. Each Japanese firm has ten reserve account data available from the PACAP database. This paper analyzes how Japanese mangers use these reserve accounts to manage earnings.

For profit and positive EBR firms, the size, tax, depreciable assets, earnings variance variables are significant. For profit and negative EBR firms, however, the sign of depreciable assets is the opposite and deviation in operating activities and debt to equity variables are significant compared with profit and positive EBR firms. This implies that profit and negative EBR firms are more cautious in managing earnings in the presence of higher amounts of depreciable assets and debt to equity, but more aggressive in managing earnings if there is a deviation in operating activity. Loss firms are not motivated by depreciable assets or deviations in operating activities to manage earnings. Managers of large EBR firms use only depreciable assets after 1992 period. However, for small EBR firms, managers' motivation based on the tax, depreciable assets, and debt to equity variables are consistent over time.

INTRODUCTION

The Japanese economy was booming in the late 1980s. Now it is slowly trying to regain its economic glory days which preceded the market crash in 1990. Many of its leading industries lost their worldwide leadership positions to South Korea and other countries. Samsung has the highest market share in the world TV market surpassing Sony and Panasonic, even though Toyota is still the best auto manufacturing company in the world (http//news.chosun.com, February, 27, 2007). Since Japan does not own natural resources such as oil and lumber, most of their success depends on exports and the world economy. Currently China and other developing countries are demanding increasing quantities of oil. As a consequence, Japan still will continue to face hard times as long as oil prices remain high.

Japan is a unique country from the capital structure perspective. The Japanese capital structure has moved toward that of the U.S. and other western countries' systems after the market

crash,. However, their government still has a large impact and their system is more tax oriented than those of western countries. In addition, Japanese corporations have more reserve accounts than those of any other country in the world. It is interesting to see how their corporate managers use these reserve accounts to manage corporate earnings to meet their goals.

Previous studies have used U.S. capital market data to understand managers' motivations regarding earnings management. Managers may have motivation to manage earnings to maximize their bonuses or to maintain target income levels. However, the U.S. and Japan have different capital and business environments. Under different capital and business environments, managers may or may not behave the same way to satisfy their self-interests. This is an interesting issue that we need to test using actual Japanese data.

The purpose of this study is to test the earnings management behavior of Japanese managers using different types of reserve accounts. Typical Japanese firms maintain ten or more reserve accounts and they are legally allowed to set up reserves for their guaranteed obligations starting from April 20, 1982 (Takahashi, 1984).[1] The total amounts of these reserve accounts are very large for some firms, creating the proper environment for possible earnings management using these accounts. This is the first empirical study to study Japanese managers' earnings management motivations using different types of reserve accounts.

The paper is organized as follows: Section 2 presents the background of earnings management and the different capital and business environments in Japan. The third section describes our research methodology and data collection procedures. The fourth section reports results and discusses sensitivity analyses. The last section concludes with a summary of our findings and future research avenues.

BACKGROUND

Evans and Sridhar (1996) defined "earnings management" as an activity which incorporates any accrual-based manipulation of economic earnings by the manager. Their study predicted that within less flexible financial reporting systems, managers' compensation would depend on reported earnings. However, if there are ten or more reserve accounts like may be present in the Japanese financial system, mangers are tempted to use some of these reserve accounts to manage earnings to meet their target income. Moses (1987) studied firm specific factors that may provide motivation for U.S. managers to manage earnings by choice of accounting methods. He showed that earning management was associated with factors such as firm size, the existence of bonus compensation plans, and the variation of actual earnings from expected earnings.

Several studies used discretionary accruals to study managers' earnings management behavior. While these studies are not in the same context as our study, they found that managers used their discretion to adjust their firm's reserve accounts and some of the same motivational factors

may be relevant for our study.   See, for example, Jones (1991), Dechow and Sloan (1991), DeAngelo et al. (1994), Maydew (1997), and Kasznik (1999).

Early studies tested earnings management motivation using only U.S. data. However, even if we consider the unique financial and business environments in Japan, there is some empirical evidence to sustain the U.S. findings in the Japanese context. Herrmann and Inoue (1996) showed that under certain operating conditions, firm size, income taxes, capital intensity, deviation in operating activities, and earnings variability are all related to motivations of managers to manage earnings using depreciation changes in the Japanese context. Herrmann et al. (2003) later also find that income from sales of assets and management forecast error have a negative relationship after controlling for the debt-to-equity ratio, firm size, growth, and last year's income from asset sales.

Ali and Hwang (2000) find that value relevance is lower for Japanese firms since Japan has bank-oriented financial systems, private-sector bodies are not involved in the standard-setting process, uses the Continental accounting model, uses tax-based accounting, and more is spent on external auditing services.

Darrough et al. (1998) find that the debt-to-equity and asset hypotheses hold in Japanese firms only after the 1990 market crash. Even though Japanese managers may have different financial and business environments than their U. S. counterparts, such as Japanese accounting is more tax oriented, their firms share cross-holdings (keirutsu) with other firms, and their managers are more long-term goal oriented, Japanese managers still choose income increasing accounting accruals to increase their bonuses and increase the amount of outside funding.

Other factors may change managers' earnings management behavior across countries. For example, Black and White (2003) compared earnings and balance sheet information in Japan, Germany and the U.S. They assumed that accounting in Japan and Germany is conservative, more debt is financed with main banks, and accounting is more tax-based when compared to U.S. Their findings show that in the U.S. positive earnings are more value relevant than the book value of equity, but not negative earnings. However, Germany has the opposite results and Japan shows mixed results.

Kumar and Hyodo (2001) studied Japanese and U.S. price-earnings (P/E) ratios between 1975 and 1995. Their study used parent-only reported earnings which is more reliable than consolidated earnings in Japan. They find higher price-earnings ratios in Japan compared with the U.S. Possible reasons for higher P/E ratios in Japan are: Japanese firms' reported earnings are smaller because they allow special reserves for future uncertainties such as retirement benefits, product returns and repairs and also allow larger depreciation expenses. Some of these factors are relevant for our current study.

RESEARCH METHODOLOGY

Income Smoothing Measure

The absolute value of the differences between the changes in earnings before reserve (EBR) accounts with the change in earnings (E) deflated by sales is used as a measure of earnings management (EM) as was used by Herrmann and Inoue (1996):[2]

$$EM = \frac{\left| EBR_t - EBR_{t-1} \right| - \left| E_t - E_{t-1} \right|}{SALES}$$

where EM = earnings management
EBR = earnings before reserve accounts in period t and t-1
E = earnings in period t and t-1.

The higher book values of each reserve account or any combination of several reserve accounts maintained by Japanese firms may increase the opportunities of managers to smooth earnings (Darrough et al., 1998). Sales are used as a deflator because sales are less prone to manipulation. The expected sign of EM is positive as positive values of EM are consistent with Japanese managers' earnings management motivations.

Various Factors for Earnings Management

Prior studies used the following factors as independent variables for studying accounting choices and economic consequences.

Firm Size

Larger firms usually have higher political costs since their activities can be easily exposed via media and they need to protect their reputation (Watts and Zimmerman, 1986). If larger firms miss their target income or have bad news, investors or creditors will pay more attention. Therefore, managers may have higher motivation to manage earnings. However, this may not be the case for Japanese firms since most of their larger firms are multinational firms and they can diversify their risk easily. In addition, most larger firms are backed by main banks and belong to one of six keiretsu groups. Some larger firms may belong to the same keiretsu group as media firms. Therefore, it may be easy for Japanese firms to mitigate their political costs. From the above discussions, no sign is predicted for the relation between firm size and the earnings management variable. Firm size is measured by the natural log of total sales consistent with most other studies.

Taxes

Generally, individuals or corporations do not want to pay higher taxes. For Japanese managers their requirement of tax-financial reporting conformity provides higher motivation to manage earnings by reporting systematically low profits and consequently paying less tax (Choi and Meek, 2005). It is expected that firms with greater current tax liabilities are more likely to manage earnings. Therefore, the EM variable and the tax variable are expected to have a positive relationship. Current year income taxes are also deflated by sales.

Bonus Compensation

Moses (1987) provides evidence using U.S. data that managers have motivation to manage earnings to maximize their bonus compensation. However, the bonus amount paid to Japanese managers is relatively smaller when compared with that of U.S. managers (Herrmann and Inoue, 1996). Additionally, Japanese managers sometimes work as a team with bonuses distributed based on seniority. Therefore, the impact of a bonus compensation variable in Japanese firms is expected to be small. However, the sign of bonus variable is the same as U.S. studies, which is positive, since the managers of Japanese firms who have higher stakes will have more motivation to manage earnings.

Depreciable Assets

Japanese firms, on average, have a higher ratio of depreciation expense compared to total fixed assets. The firms with higher depreciable asset book values have more opportunities to use changes in depreciation methods to manage earnings (Herrmann and Inoue, 1996). Thus, a depreciable assets variable is included in our model to control confounding effects. The sign of this variable is expected to be positive with the EM variable.

Operating Activity Deviations

Japanese firms focus on sales or growth rather than production as their main goal (Radebaugh and Gary, 1997). In our study, sales are used to measure deviation in operating activities since sales are less prone to manipulation. Managers may have motivations to manage earnings if actual operating results deviate from expected operating results. Therefore, the sign of the operating activity deviation variable is expected to be positive with the earnings management variable.

Earnings Variability

Moses (1987) finds evidence using U.S. data that there is a negative relationship between earnings variability and earnings management. However, the variability of earnings may measure market risk (Daley et al., 1988). Therefore, fluctuations of earnings may increase risk and increase borrowing costs. If this is the case, managers' earnings management motivations and earnings variability will have a positive relationship.

Debt-to-Equity Ratio

The debt-to-equity ratio variable has generally shown significant income increasing choices in U.S. studies. However, Darrough et al. (1998) show evidence that the debt-to-equity ratio is not significant using Japanese data. Interestingly, however, this result changes after the market crash of 1990 in Japan. Their results suggest that the debt and equity environment of Japan since 1990 is moving toward to that of U.S.. The general public does not own many shares in Japan compared to banks or other institutional investors (Black and White, 2003). Usually Japanese firms depend on debt financing rather than equity financing. Therefore, the debt-to-equity ratio is included in our model to control confounding effects. The expected sign of this variable is positive with the EM variable.

Data Collection and Descriptive Statistics

Our study used only March 31 fiscal year-end and non-financial firms from the PACAP database for Japan compiled by the Pacific-Basin Capital Market (PACAP) Research Center at the University of Rhode Island. We include only March 31 fiscal year end firms to ensure similar information environments. Approximately 2/3 of Japanese firms fall in this category. Banking firms are excluded due to a non-homogeneous business environment and firm characteristics that may lead to confounding effects. Table 1A presents basic summary statistics. A total of 11,866 sample firm data are available from the PACAP database for our study period. Overall, the EM variable is 1.4% of sales. The average size of our sample firms is 56.247 million Yen in sales. Tax payments are 2.1% of sales. Bonuses are 37.34% of operating income and depreciable assets are 23.24% of total assets. The absolute value of changes in sales divided by sales is 9.31% and the absolute value of the three year average earnings divided by sales is 1.6%. For Japanese firms, debts are three time higher than equity in our sample. Table 1B presents the correlation matrix. None of the variables have serious correlation problems based on Table 1B. EM and TAX has 26.78% and SIZE and VAR has -23.87% correlations.

Table 1A : Summary of Basic Statistics						
Variable	N	Mean	Standard Deviation	Minimum	Maximum	
EM	11866	0.0144	0.0396	-0.0434	0.3069	
SIZE	11866	10.7501	1.0746	8.1167	13.6320	
TAX	11866	0.0206	0.0205	-0.0093	0.1165	
BONUS	11866	0.3734	0.6668	-2.5816	6.3709	
DASSET	11866	0.2324	0.1188	0.0131	0.6014	
DEV	11866	0.0931	0.0807	0.0013	0.4779	
VAR	11866	0.0161	0.0267	0.0003	0.2504	
DBT/EQT	11866	3.3328	3.8860	0.1164	34.3934	

Table 1B: Correlation Matrix								
	EM	SIZE	TAX	BONUS	DASSET	DEV	VAR	DBT2EQT
EM	1							
SIZE	-0.0475	1						
TAX	0.2678	-0.0918	1					
BONUS	-0.0564	0.0041	-0.1443	1				
DASSET	-0.0268	-0.1548	-0.0508	0.0393	1			
DEV	0.1268	-0.0994	0.0832	-0.0976	-0.1072	1		
VAR	-0.0006	-0.2387	-0.0792	-0.0597	0.0798	0.1617	1	
DBT/EQT	-0.1260	0.0894	-0.3629	-0.0319	-0.1770	0.0512	0.0446	1

Variable definitions:
Dependent variable:

$$EM = \frac{\left| EBR_t - EBR_{t-1} \right| - \left| E_t - E_{t-1} \right|}{SALES}$$

EM = earnings management
EBR = earnings before reserve accounts in period t and t-1
E = earnings in period t and t-1.
Independent variables:
SIZE = log of sales
TAX = tax payment/sales
BONUS = bonus/operating income
DASSET = depreciable assets/total assets
DEV = $\left| Sales_t - Sales_{t-1} \right| / Sales_{t-1}$

$$VAR = 1/3 \sum_{t=1}^{3} \left| E_t - E_{t-1}/Sales_t \right|$$

DBT/EQT = debt-to-equity ratio

Table 2 presents number of firms and total reserve account changes by year and by classifications of firms. Overall, the numbers of earnings management firms are slightly less than those of non-earnings management firms. In addition, profit and loss firms are also similar in numbers, but it changes year by year.

Table 2:Number of Observations in Reserve Accounts by Year					
Year	Total Number of Firms	Total Reserve Accounts Changes	Income Smoothing	Non Income smoothing	Profit	Loss
1976	368	367	216	152	238	130
1977	407	406	198	209	235	172
1978	426	425	185	241	335	91
1979	395	394	193	202	294	101
1980	382	382	216	166	206	176
1981	380	380	172	208	184	196
1982	372	371	180	192	169	203
1983	345	343	168	177	217	128
1984	349	349	185	164	261	88
1985	364	363	164	200	185	179
1986	377	377	175	202	199	178
1987	385	385	218	167	319	66
1988	426	426	221	205	341	85
1989	491	491	289	202	363	128
1990	578	578	178	400	369	209
1991	611	610	256	355	221	390
1992	646	646	298	348	186	460
1993	667	665	343	324	294	373
1994	680	679	366	314	401	279
1995	682	680	317	365	435	247
1996	700	698	369	331	413	287
1997	683	678	280	403	254	429
1998	612	611	303	309	193	419
1999	540	537	311	229	351	189
Total	11866	11841	5801	6065	6663	5203

RESULTS AND ADDITIONAL TESTS

Table 3 summarizes Chi-Square test results of earnings management behavior based on differing operating conditions. The Chi-Square test is performed to test the equal frequency of operating conditions. The Chi-Square test result is significant ($X^2 = 200.12$, $P < .01$). Therefore, this result shows that earnings management differs based on operating condition. Of the 11,866 sample firms, 2,931 (24.7%) report changes in reserve accounts and are classified with a profit and positive EBR. In this situation, managers are expected to choose income decreasing reserve account change methods to manage earnings (Herrmann and Inoue, 1996). Only 1,259 (43%) of 2,931 firms managed earnings by choosing income decreasing reserve account changes. A total of 3,732 firms (31.5%) report a profit and negative EBR and 5,203 firms (43.8%) report a loss during the test period. For firms with a profit and negative EBR, managers may choose income increasing reserve account changes to manage earnings. Of the 3,732 firms with profit and negative EBR, 2,178 (58.4%) managed earnings by income increasing reserve account changes. For firms reporting losses, managers may choose income increasing reserve account change methods to manage earnings. Of the 5,203 firms with losses, 2,364 (45.4%) managed earnings by income increasing reserve account changes. However, firms with a profit and negative EBR may have contradictory motivations for managers. Only firms with a minimum tax burden may increase income by changing reserve accounts.

Table 3: Chi-Square Test Results of Smoothing Behavior by Operating Conditions				
	Profit and Positive EBR	Profit and Negative EBR	Loss	Total
Earnings Management	1259	2178	2364	5801
Non-Earnings Management	1672	1554	2839	6065
Total	2931	3732	5203	11866
Computed Chi-Square statistic = 200.12 Critical Chi-Square Value with degree of freedom 2 at 1% = 9.21				

Table 4 reports full sample results of regression analysis with a fixed group effect.[3] For the overall model, adjusted R2 = 24.56% and the model is significant (F = 2.40, $P < .01$). Firm size, income taxes, depreciable assets, deviation in operating activities, and debt to equity variables are significant. The bonus variable is not significant as expected since Japanese managers have less incentive for earnings manipulation for a bonus (Kaplan, 1994). However, firm size and depreciable assets variables have negative signs, rather than the positive signs that we anticipated from the results of previous U.S. studies. These are interesting outcomes. Usually larger firms have higher motivation to smooth income to reduce political costs in the U.S. business environment, but for the Japanese firms, smaller firms more actively manage earnings using changes in reserve accounts.

Table 4: Full Sample Regression Results with Fixed Group Effect and Time Effect		
Variable	Coefficient	t-statistic
Intercept	0.12816	5.64***
SIZE	-0.01013	-5.90***
TAX	0.60669	20.03***
BONUS	-0.00029	-0.52
DASSET	-0.01675	-2.24**
DEV	0.02797	5.60***
VAR	-0.00590	-0.36
DBT/EQT	-0.00113	-6.99***

Adj R^2= 0.2456
F test = 2.40***
Hausman test: 80.82***
Number of Observation: 11866
Note: F test rejects the null hypothesis that there are not any fixed effects. Hausman test for random effects shows a fixed effect model is preferred to a random effect model.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Variable definitions:

Dependent variable:

$$EM = \frac{|EBR_t - EBR_{t-1}| - |E_t - E_{t-1}|}{SALES}$$

EM   =   earnings management
EBR =   earnings before reserve accounts in period t and t-1
E   =   earnings in period t and t-1.
Independent variables:
SIZE = log of sales
TAX = tax payment/sales
BONUS = bonus/operating income
DASSET = depreciable assets/total assets
DEV = $|Sales_t - Sales_{t-1}|/Sales_{t-1}$

$VAR = 1/3 \sum_{t=1}^{3} |E_t - E_{t-1}/Sales_t|$

DBT/EQT = debt-to-equity ratio

Smaller firms may have higher stakes to smooth income which could reverse the political cost motivation. For large Japanese firms that are usually backed by main banks or a keiretsu relationship, they feel less pressure for generating capital. However, smaller firms need to show a

smooth stream of income in the capital market or to their major stakeholders, if they want to maintain their reputation or banks may exert pressure on them withdrawing their investments. In addition, the smaller firms may be under increased pressure to avoid delisting.

The depreciable assets variable, computed as the ratio of depreciable assets to total assets, is expected to have a positive sign. However, for this study, the amount of depreciable assets is far less than the amount of reserve accounts even though they are not highly correlated (r = -0.0268). This could be a possible reason for the negative sign of the depreciable assets variable. Earnings variability is not significant for the Japanese case.   The debt-to-equity ratio has a negative sign and significant. Again this result differs from those   of previous U.S. studies.   Most Japanese firms have higher debt ratios than U.S. firms and if a firm can maintain those higher ratios, this may signal to the market that the firm is backed by main banks or other keiretsu firms.

Table 5 reports the results of regressing each reserve account against our independent variables. Discussion of each of the individual regressions is relative to the overall regression model. For the reserve for loan losses accounts, size and tax have the same sign as the overall model, and are statistically significant. However, the depreciable assets, operating activity deviation, and debt to equity variables are not significant compared with all the reserve account model in Table 4. Additionally, the sign is positive and significant for the reserve for loan loss model, while it was negative and insignificant for the overall model.

For the reserve for corporate taxes, size and debt to equity are not significant unlike the overall model, while the tax variable continues to be positive and significant. Unlike the overall model, bonus is negatively significant. Three variables continued to be significant, but changed their signs: depreciable assets, operating activity deviation, and earnings variability.

For the reserve for business taxes, size and debt to equity are not significant, while the depreciable assets variable continues to be positive. Unlike the overall model, bonus is negatively significant. Two variables continued to be significant, but changed their signs: taxes and operating activity deviation.

For the reserve for bonuses, there is no overlap on significant variables. Three variables continued to be significant, but changed their signs. Size changed from negatively significant to positively significant, while taxes and operating activity deviation changed from positively to negatively significant. Depreciable assets and debt to equity cease to be significant, while the bonus variable becomes positively significant.

For special reserves, the tax variable continues to be positive and significant. Both size and debt to equity change from significant with negative signs to significant with positive signs. Debt to equity now is also positively significant. However, depreciable assets and operating activity deviation cease to be significant.

Table 5: Full Sample Regression Results by Each Reserve Account					
Dependent	EMTO	EM29	EM43	EM44	EM45	
Intercept	0.128	0.008	-0.004	0.003	-0.004	
	5.64***	1.22	-0.72	1.11	-3.00***	
SIZE	-0.010	-0.001	0.000	0.000	0.000	
	-5.90***	-2.64**	0.46	-0.33	3.95***	
TAX	0.607	0.024	0.025	-0.014	-0.007	
	20.03***	3.46***	3.53***	-5.09***	-4.14***	
BONUS	0.000	0.000	0.000	0.000	0.000	
	-0.52	0.50	-2.61**	-2.57**	4.86***	
DASSET	-0.017	0.000	0.003	-0.002	0.001	
	-2.24**	0.15	1.82*	-3.03***	1.67	
DEV	0.028	-0.001	-0.018	-0.005	-0.005	
	5.60***	-0.97	-15.32***	-11.67***	-18.08***	
VAR	-0.006	0.021	-0.011	0.001	0.001	
	-0.36	5.25***	-2.62**	0.62	1.14	
DBT/EQT	-0.001	0.000	0.000	0.000	0.000	
	-6.99***	-1.33	0.00	0.35	-0.39	
Adj R2	0.2456	0.1331	0.1691	0.1592	0.1801	
No of Obs	11866	9690	10702	8983	11778	
Dependent	EM55	EM58	EM59	EM60	EM70	EM71
Intercept	-0.002	0.045	0.041	-0.002	0.003	0.000
	-1.49	4.32 ***	4.02 ***	-2.37 **	0.32	-0.08
SIZE	0.000	-0.004	-0.003	0.000	0.000	0.000
	1.69*	-4.43 ***	-3.93 ***	2.74 ***	-0.17	-0.07
TAX	0.004	0.137	0.145	-0.021	-0.032	0.013
	2.31**	9.82***	10.75***	-19.63***	-2.89***	1.82
BONUS	0.000	0.000	0.000	0.000	0.000	0.000
	-0.94	-0.93	-1.24	1.21	-1.43	-0.21
DASSET	0.000	0.001	0.000	0.001	-0.001	0.002
	0.24	0.35	-0.12	3.77***	-0.27	1.44
DEV	0.001	0.007	0.006	-0.001	0.001	-0.001
	1.85	3.00***	2.85***	-8.00***	1.15	-1.07
VAR	0.001	-0.011	-0.011	-0.001	-0.029	-0.009
	0.93	-1.45	-1.44	-2.43**	-6.11***	-2.13**
DBT/EQT	0.000	-0.001	-0.001	0.000	0.000	0.000
	2.14**	-7.16***	-7.57***	-2.98 ***	1.88*	1.69*
Adj R2	0.1335	0.1838	0.1898	0.1805	0.3383	0.0161
No of Obs	10075	11866	11711	11665	1654	733

* Variable definitions are the same as in Table 4.
EM29: reserve for loan losses, EM43: reserve for corporate taxes, EM44: reserve for business taxes, EM45: reserve for bonuses, EM55: special reserves, EM58: legal reserve, EM59: capital reserve, EM60: earned reserve, EM70: reversal of legal reserve, and EM71: provision for special reserve.

For both the legal reserve and the capital reserve, the depreciable asset variable is not significant. The other independent variables have the same signs and significance as those in the overall model. This reserve account is the most consistent with the results of combined reserve accounts.

For the earned reserve, there is no overlap in the sign and significance of the independent variables. Five variables that were significant in the overall model changed signs. Size and depreciable assets are now positively significant. However, tax, operating activity deviation, and earnings variability are negatively significant. Earnings variance becomes negatively significant.

For the reversal of legal reserve, size, depreciable assets, and operating activity deviation cease to be significant. Two significant variables change signs: tax and debt to equity. However, tax and earnings variability, which was not significant in the overall model, are negatively significant. Debt to equity is marginally significant and positive.

For the provision for special reserve, earnings variability is negatively significant and debt to equity is marginally significant and positive. However, for this and reversal of legal reserve accounts, a lot of data are missing and their results are not stable.

Table 6 presents the results based on the size of earnings before reserve (EBR) accounts.[4] For small EBR firms, the tax and operating activity deviation variables are positive and significant, while the size, depreciable assets, and debt to equity variables are negative and significant. Each of these is consistent with the overall model results. For large EBR firms, the results are the same with one exception. Operating activity deviation ceases to be significant. This implies that operating activity deviation is not an important factor for larger EBR firms.

Table 7 reports regression results based on operating conditions. For profit and positive EBR firms, size is negative and significant and tax is positive and significant as in the overall model. Operating activity deviation and debt to equity are no longer significant. This means that for profit and positive EBR firms, operating conditions and debt to equity are not important factors for earnings management. However, earnings variability is now significant and positive impact on earnings management. Depreciable assets changed from negative and significant to positive and significant.

For profit and negative EBR firms, the signs of statistically significant variables are exactly the same as in the overall model. However, the results differ considerably from those of the profit and positive EBR firms. The depreciable assets variable is negatively significant, but operating activity deviation is positive and significant. This is an interesting result. This implies that for profit and positive EBR firms, depreciable assets have a positive impact, but for profit and negative EBR firms, depreciable assets have a negative impact on earnings management. However, the debt-to-equity ratio becomes significant for profit and negative EBR firms. This implies that for profit and negative EBR firms, higher debt-to-equity ratios may require more caution for earnings management. This might be a result of increased oversight by lenders as debt to equity ratios and risk rise.

Table 6: Full Sample Regression Results by EBR		
Variable	Coefficient	t-statistic
EBR Large – Above Median (N=5881): fixed group and time effect considered		
Intercept	0.06294	2.19**
SIZE	-0.00393	-1.69*
TAX	0.54078	13.36***
BONUS	-0.00028	-0.45
DASSET	-0.01958	-2.19**
DEV	0.00644	1.13
VAR	-0.02829	-1.62
DBT/EQT	-0.00061	-3.94***
Adj R²= 0.2583 F test= 1.83*** Hausman test= 38.07*** EBR Small – Below Median (N=5901)): fixed group and time effect considered		
Intercept	0.25904	6.29***
SIZE	-0.02128	-6.48***
TAX	0.60325	13.00***
BONUS	0.00011	0.12
DASSET	-0.04230	-3.00***
DEV	0.04262	5.11***
VAR	0.00893	0.29
DBT/EQT	-0.00342	-6.33***
Adj R²= 0.3178 F test= 2.93*** Hausman test= 70.02***		
*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. * Variable definitions are the same as in Table 4.		

For loss firms, the results are similar to those of the overall model and the profit and negative EBR firm model. However, the depreciable assets and operating activity deviation variables cease to be significant. For loss firms, these variables may not be important factors to motivate mangers to manage earnings.

Table 7: Regression results by operating conditions		
Variable	Coefficient	t-statistic
Profit and Positive EBR (n=2772)): fixed group and time effect considered		
Intercept	0.05190	2.22**
SIZE	-0.00566	-2.94***
TAX	0.08412	2.52**
BONUS	-0.00029	-0.45
DASSET	0.01663	2.12**
DEV	-0.00085	-0.14
VAR	0.04892	2.91***
DBT/EQT	0.00001	0.07
Adj R²= 0.3386 F test= 1.43*** Hausman test= 27.13***		
Profit and Negative EBR (n=3589)): fixed group and time effect considered		
Intercept	0.15896	2.83***
SIZE	-0.00897	-1.91*
TAX	0.29990	3.36***
BONUS	-0.00536	-1.49
DASSET	-0.04302	-2.03**
DEV	0.03203	2.57**
VAR	0.00131	0.02
DBT/EQT	-0.00777	-11.48***
Adj R²= 0.3959 F test= 1.82*** Hausman test= 83.47***		
Loss Companies (n=5123)): fixed group and time effect considered		
Intercept	0.09044	3.36***
SIZE	-0.00782	-3.70***
TAX	0.65921	16.12***
BONUS	0.00024	0.45
DASSET	0.00133	0.15
DEV	0.00835	1.24
VAR	-0.00647	-0.34
DBT/EQT	-0.00056	-2.98***
Adj R²= 0.2858 F test= 1.70*** Hausman test= 76.93***		
*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. * Variable definitions are the same as in Table 4.		

Sensitivity Analysis by Time Period

Japan experienced its market crash in 1990 and its equity values dropped more than one-half during the bubble. Therefore, it is possible that there may be an economic structure shift after 1990. To compare the results before 1990 and after 1990, we have performed sensitivity analyses. We tested each variable by a different time period after eliminating the extreme top and bottom 5%. For Group 1, the time period is from 1983 to 1990 and for Group 2 the time period is from 1992 to 1999. 1983 is the first year companies were legally required to have reserve accounts in Japan. Ending analysis in 1999 results in the same number of years in the before and after market crash time periods. The transition year, 1991, is deleted. Table 8 reports the results of this comparison test.

Table 8: Regression results of EBR by time periods after deleting the extreme 5% EBR					
	Group 1: 1983 - 1990		Group 2: 1992 - 1999		H0: $\beta^{Group1} = \beta^{Group2}$
Variable	Coefficient	t-statistic	Coefficient	t-statistic	t-statistic
EBR Large – Top 25%					
Intercept	0.11530	2.49**	0.05304	0.80	2.88*
SIZE	-0.01067	-2.06**	-0.00492	-0.74	2.63**
TAX	0.36332	4.72***	0.04753	0.47	7.69***
BONUS	0.00024	0.23	0.00070	0.65	1.17
DASSET	-0.04924	-2.42**	0.04502	1.87**	1.64
DEV	-0.00721	-0.70	0.00461	0.33	0.73
VAR	-0.01940	-0.48	-0.00938	-0.24	0.59
DBT/EQT	-0.00063	-2.50***	-0.00046	-1.30	1.03
Adj R² 0.3709 0.3201 N 829 675					
EBR Small – Bottom 25%					
Intercept	0.67679	3.14***	0.14134	1.66*	2.15**
SIZE	-0.04906	-2.63***	-0.00933	-1.49	1.21
TAX	0.51766	2.57**	0.41482	5.49***	5.37***
BONUS	0.00529	1.44	-0.00078	-0.83	0.96
DASSET	-0.20460	-2.62***	-0.04851	-2.04**	0.63
DEV	0.02949	1.00	0.02749	2.31**	2.01**
VAR	-0.06259	-0.32	-0.00913	-0.24	0.16
DBT/EQT	-0.00407	-1.79*	-0.00135	-1.66*	0.34
Adj. R² 0.5204 0.2952 N 704 1785					
*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. * Variable definitions are the same as in Table 4.					

From Table 8, there are some differences before and after Japan's recession. The size and tax variables are significant with the large top 25% of EBR firms. Both of these variables are significant before 1990, but not significant in the later period. The depreciable assets variable is significant for both periods, but the difference is not significant. Debt to equity is significant in the earlier period, but not significant in the later period for the top 25% of EBR firms. From the results, the size and tax variables are important factors for earnings management before the 1990 period, but not the later period.

For the bottom 25% of EBR firms, tax and deviation in operating activities are significantly different between the before and after market crash periods. For small EBR firms, however, the tax variable is a more important factor in the later period and the deviation in operating activities variable is only important in the later period. For the bottom 25% of EBR firms, the size variable is only significant before the 1990 period, but the deviation in operating activities variable is significant only after the after 1992 period. These results suggest that there may have been structural changes in the Japanese economy after 1990. For small EBR firms, the managers' motivations to manage earnings are more consistent across time periods, but for large EBR firms, managers' motivations to manage earnings reduced dramatically after the 1992 period. This implies that Japanese business environment is moving toward a more western style.

SUMMARY AND CONCLUSIONS

This study shows that the Japanese managers manage earnings by using changes in reserve accounts, but this differs significantly by the size of EBR as well as by reserve account. For profit and positive EBR firms, the size, tax, depreciable assets, and earnings variance variables are significant. For profit and negative EBR firms, however, the sign of depreciable assets is the opposite and deviation in operating activities and debt to equity variables are significant. This implies that profit and negative EBR firms are more cautious in managing earnings as the depreciable assets and debt to equity ratios increase, but more aggressive in managing earnings, if there is a deviation in operating activities. For loss firms, higher depreciable assets or deviations in operating activities do not result in earnings management. From the results of the full sample and individual reserve account regression analyses, the presence of bonus is not significant. Therefore, a bonus is not a motivator for Japanese managers. This result is consistent with previous studies. Earnings variability is not significant for the full sample model, but it may have an impact on individual reserve accounts. The sign of the size variable is negative for Japanese firms. This is an interesting result for the Japanese business environment. For Japanese firms, smaller firms manage earnings more aggressively to meet their target income, but larger firms may have other resources such as main bank support or keiretsu support which are unique in their environment. For the top 25% EBR firms, managers use only depreciable assets is only significant after the Japanese market

crash. However, for the bottom 25% EBR firms, impact of the tax, depreciable assets, and debt to equity ratio variables are consistent before or after the market crash.

There are limitations in this paper. EM is measured using a single period. In addition, this paper only focuses on one EM alternative. However, this paper documented earnings management behavior of Japanese managers using total changes in reserve accounts and the change in each reserve account based on the size of EBR and compared the results before and after the market crash of 1990. The change in the reserve accounts may be caused by changes in the macroeconomic factors and management may be responding to these changes rather than managing earnings. Therefore, other macroeconomic factors may need to be controlled in future research. Further analyses of each reserve account and its unique financial environment to understand Japanese mangers' earnings management behavior may be fruitful avenues for the future research.

ENDNOTES

1.   Reserve accounts used for this study are reserve for loan losses, reserve for corporate taxes, reserve for business taxes, reserve for bonuses, special reserves, legal reserve, capital reserve, earned reserve, reversal of legal reserve, and provision for special reserve which are identified in the PACAP database. These accounts have existed since 1982. This study uses the period from this date to the market crash in 1990 as one period. We then use a comparable length period after the crash for sensitivity analysis by time periods.

2.   For the purpose of this paper, earnings management is equivalent to income smoothing even though income smoothing is a form of earnings management.

3.   Data estimation, intrinsically, allows for heterogeneity across panel units and across time. This means that earnings management behaviors might be different across time and firms in the model. The fixed effect model that we used in this study confines that heterogeneity to the intercept terms of the relationship. However, that heterogeneity is absorbed in the error structure in the random effects model. The Hausman (1978) specification test is used to compare the fixed model with the random effect model under the null hypothesis that individual effects are uncorrelated with other regressors in the model. A fixed effect model is preferred if effects are correlated.

4.   Each reserve account was used to compute the dependent variable instead of aggregate reserve accounts and the test was rerun using the same sets of independent variables and the results are reported in Table 5.

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