Volume 4 **ISSN 1544-1458**

ACADEMY OF STRATEGIC MANAGEMENT JOURNAL

The official Journal of the

Academy of Strategic Management

William T. Jackson, Editor
Dalton State College

Academy Information
is published on the Allied Academies web page
www.alliedacademies.org

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Whitney Press, Inc.

Printed by Whitney Press, Inc.
PO Box 1064, Cullowhee, NC 28723
www.whitneypress.com

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CONTENTS

LETTER FROM THE EDITOR

We are pleased to present the *Academy of Strategic Management Journal* (ASMJ). The Academy of Strategic Management is an affiliate of the Allied Academies, Inc., a non-profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge. The editorial mission of the *Journal* is to advance the field of strategic management and the impact this area has on the success of any organization. Thus, the journal publishes high quality, theoretical and empirical manuscripts pertaining to this field of knowledge. Not only is our intent to advance the discipline, but also to publish articles that have value to practitioners and scholars around the world.

The manuscripts contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

Our editorial review policy maintains that all reviewers will be supportive rather than destructive, helpful versus obtrusive, mentoring instead of discouraging. We welcome different points of view, and encourage authors to take risks with their research endeavors.

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Thank you for your interest in the organization. I look forward to hearing from you at any time.

William T. Jackson, Editor
Dalton State College

Manuscripts

HOW IMPORTANT ARE STAKEHOLDER RELATIONSHIPS?

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ABSTRACT

The importance of organizational-stakeholder relationships has recently been of interest in the organizational studies literature. The relevance of this topic is even greater given the recent governance failures involving Enron, Tyco, and WorldCom. Indeed, an excessive emphasis on stockholders is blamed for the neglect of other legitimate stakeholder groups. We should acknowledge that the central focus of studying any organizational relationship is the establishment, development, and maintenance of relationships between exchange partners (Morgan & Hunt, 1994). This study investigates the determinants of stakeholder relationship importance and the role it plays in determining whether relationships will continue. For managers, these results suggest that an organization's ability to develop and maintain strong relationships with their salient stakeholder groups improves the chance that relationships will continue.

INTRODUCTION

What determines the importance of stakeholder-organization relationships? The notion of "paying attention to key stakeholder relationships" (Freeman, 1999: 235) is and has been a major theme in the strategic management literature. In fact, superior stakeholder satisfaction is critical for successful companies in a hypercompetitive environment (D'Aveni, 1994). Research has begun to investigate empirically what determines the success or failure of relationships between exchange partners. This has been accomplished by examining both the characteristics of the organization as well as the specific stakeholder groups and the nature of the interaction between them (Pfeffer, 1981; Jensen & Meckling, 1976; Morgan & Hunt, 1994; Williamson, 1975, 1985). An implicit assumption in much of the empirical and conceptual work is that developing and maintaining relationships are desirable goals for both the stakeholder and the organization (Dwyer, Schurr & Oh, 1987; Wilson, 1995). However, absent from much of the stakeholder management literature is a discussion of *when* relationships should be important.

This paper presents one part of an overall research stream on the relationships between organizations and their stakeholders, the development and maintenance of these relationships, and

the impact of these relationships on an organization's strategies when dealing with their stakeholder groups. This study specifically focuses on three stakeholder groups: customers/clients, employees and suppliers/distributors. Porter (1980) recognized the importance of these stakeholder groups when he formulated his "Five Forces" model of competition, which included the bargaining power of customers and the bargaining power of suppliers. Due to the nature of the study, stockholders/owners were not included in this study. Stockholders are among the most important stakeholder groups. Collecting the type of data from this group needed for the study may have been problematic for several reasons. The nature of stockholder-organizational relationships can be very dynamic. A stockholder may buy and sell ownership in an organization within a period of minutes, thus making the measurement of the relationship with an organization almost impossible. Secondly, it may be very difficult to access information pertaining to a specific stockholder. Lastly, due to the nature of the relationship, any information gathered from a stockholder may not have been relevant to this study.

Knowing what variables contribute to the success of relationships with stakeholder groups could have a beneficial effect on a firm's strategic actions. Therefore, the goal of this research was to determine what variables contribute to the importance of the organization-stakeholder relationship. This research helps strategic managers decide if they should promote stakeholder relationship strategies as effective managerial tools for their organizations. This research will also aid managers in identifying to which stakeholders the firm should cater.

CORPORATE-STAKEHOLDER RELATIONSHIPS

Stakeholder theory (Donaldson & Preston 1995; Evans & Freeman 1988; Freeman, 1984) and empirical research (Clarkson 1995) indicate that companies do explicitly manage their relationships with different stakeholder groups. Donaldson & Preston (1995) point out that although this is descriptively true, companies appear to manage stakeholders for both instrumental (i.e., performance based) reasons and, at the core, normative reasons. Building on the work of others, Clarkson (1995) defines primary stakeholders as those "without whose continuing participation, the corporation cannot survive as a going concern," suggesting that these relationships are characterized by mutual interdependence. He includes here shareholders or owners, employees, customers, and suppliers, as well as government and communities. The "web of life" view (Capra 1995) envisions corporations as fundamentally relational, that is, as a "system of primary stakeholder groups, a complex set of relationships between and among interest groups with different rights, objectives, expectations and responsibilities" (Clarkson, 1995: 107).

In an attempt to acknowledge this ongoing nature of exchange interactions, Ford (1980) suggested that companies pursue relationships with other companies to obtain the benefits associated with reducing their costs or increasing their revenues. By entering into relationships, organizations hope to gain stakeholder satisfaction and loyalty while stakeholders look for quality (Evans &

Laskin, 1994). Relationships, however, may also have some negative implications. Stakeholders may forego better exchange alternatives in the future because of their commitment and loyalty to a particular organization (Hang, Wilson, & Dant 1993). They may not be willing to give up the benefits associated with the relationship even if they could reduce operating costs by dealing with another organization. Also, if one of the exchange partners represents a major portion of the other's business, there may be a risk of overdependence due to a lack of diversification (Hang, Wilson, & Dant, 1993).

The purpose of this research was to determine when stakeholder relationships are important. We assessed relationship importance by asking stakeholders to rate the importance of holding a stake in a particular organization. There are many dimensions of stakeholder-organization interactions that may play a role in determining when relationship strategies are important or appropriate. We used situational variables and inherent risk variables as the primary determinants of relationship importance. *Situational variables* include favorability of the situation, type of product offering, amount of service, availability of substitutes, and frequency of contact between the organization and the stakeholder. *Inherent risk* is the degree of uncertainty that can occur between an organization and its stakeholders (Bettman, 1973) such as financial risk, performance risk, and termination costs. All our constructs were derived from the extant literature.

METHOD

This research was conducted in three phases. The first phase consisted of personal interviews with members of top management teams. Since relationships between the organization and key stakeholder groups evolve over time, it was important to understand the development of these relationships. The purpose of this phase was to explore issues that are important to the stakeholder management process, to understand how the process works, and to confirm that the proposed conceptual framework addresses the relevant issues. Qualitative methods, such as interviews, are "highly appropriate in studying process because depicting process requires detailed description" (Patton, 1990: 5). Personal interviews were conducted with three panels for a total of sixteen members of top management groups. The first panel included representatives of the following areas: government, banking, brokerage, industrial equipment leasing, and a national stock exchange. The second panel consisted of representatives of the investment, publications, logistics, banking, petrochemicals, and pharmaceuticals industries. The third panel consisted of representatives of a non-profit organization and a pharmaceutical firm. The respondents represented the companies that agreed to forward copies of the survey to the key stakeholder groups identified in this study. These organizations provided lists of key customer groups, key suppliers/distributors, and employees, and we randomly chose survey respondents from that list.

The second phase of this research consisted of a survey sent to organizational stakeholders, specifically customers, employees, and suppliers/distributors. The purpose of this phase was to

generate responses to the survey items used to test the major hypotheses in this study. In the survey, respondents were asked to describe the relationships they have with an organization in which they have a stake using relationship importance as an *a priori* distinction. The intent was to have each stakeholder rate their relationship with the organization in which they have a stake that varies in importance. For example, a stakeholder may have been asked to describe the relationship they have with an organization that they have a good relationship with and with whom it is important to have a relationship or an organization that they do not have a good relationship with and with whom it is not very important to have a relationship.

A standardized, open-ended interview approach was used. With this type of approach, each person was asked essentially the same questions (Patton, 1990) which were written in advance in exactly the way they were asked during the interview. Standardized, open-ended interviews are systematic and help ensure that the interviewer's time is used efficiently. Using standardized questions also made data analysis easier and added credibility to the responses because questions were evaluated prior to the actual interviews. However, to allow for individual circumstances that may not be addressed by standardized questions, respondents were also given the opportunity to raise additional issues that they considered to be important in relationships with their stakeholders. Most of the questions were experience/behavior type questions that asked the respondent to describe their activities in the present or in the past (Patton, 1990). These questions were designed to explore the relationships the members of the top management groups have with their stakeholders and to generate items for the survey instrument.

The purpose of the survey was to determine what is important in the relationship from the stakeholder's perspective, and to determine their variability across situations. Four versions of the survey were developed. A packet of fifteen versions of each survey was sent to each member of the top management group that had agreed to participate in the study. One version of the study was then randomly distributed to members of the key stakeholder groups identified in this study. Stakeholders were surveyed about their perceptions of the relationships they have with an organization in which they have a stake, not necessarily the same organization in which the member of the top management group and the respondent held a stake. This was performed to reduce the threat of demand characteristics in completing the survey that would affect the validity of the results. The survey contained items measuring each of the constructs in the conceptual framework (situational variables and inherent risk variables).

Each survey was accompanied by a cover letter that addressed the primary objectives of the research. In addition to explaining the purpose of the survey, the letter explained how each stakeholder was to be selected to participate in this study and emphasized how important their response was to be to the study. Respondents were told that their responses would remain confidential. The cover letter also emphasized that the survey was not difficult to complete. Respondents were given a postage paid envelope to return to the researcher to insure that the study

would not cost the respondent anything but their time, and to expedite a speedy return of the completed survey

The third phase involved analyzing the results of the surveys using statistical methods to test the significance of each of the proposed determinants of stakeholder relationship importance. This paper reports the results generated by the survey.

FINDINGS AND FUTURE DIRECTIONS

As noted above, prior to sending out the mail survey personal in-depth interviews were conducted with key members of top management groups (Vice-President and higher). The objective of these interviews was to make sure as many relevant variables as possible were included in the mail survey and also to test the reliability and appropriateness of the survey instrument. Respondents were asked a set of similar questions. Three sets of interviews were conducted face-to-face in a conference room at the author's place of employment. Interviewees represented different types and sizes of organizations. Despite the differences in type and size of organizations, many common themes emerged.

The personal interview suggested that quality of the offering and service were essential for stakeholders making decisions about whether to continue a relationship. Trust between the organization and the stakeholder was also deemed important for these types of decisions. The members of the top management groups felt that stakeholders want to establish long term relationships with organizations to minimize the amount of time they spend negotiating. However, long-term relationships do not mean that the organization can become complacent. The members of the top management groups that were interviewed seemed to feel that the consumer/client groups strive to obtain the best offerings at the best prices with the best advice that the organizations in which they held a stake can provide. The members of the top management groups also felt that the employee group wanted to be treated fairly and equitably. Lastly, the members of the top management group felt that the supplier distributor group expected honesty and fairness in their negotiations. This implies that organizations need to maintain high levels of trust and honesty even if they have long-term relationships with their stakeholders.

Nineteen packets containing fifteen copies of each of the four versions of the survey were distributed to members of the top management teams who had participated in the interview portion of the study. The version a potential respondent received was randomly determined. A respondent only received one version of the survey. The four versions of the survey were A) good relationship, relationship important, B) good relationship, relationship not important, C) poor relationship, relationship important and D) poor relationship and relationship not important. Each survey was accompanied by a cover letter signed by the author that explained the purpose of the research and how the surveys were to be distributed.

A total sample of 496 surveys was received, representing a 44% overall response rate. The highest response rate for the separate versions was for Version B (52%) that asked respondents to describe a relationship that was good but with whom it was not important to have a relationship. The lowest response rate was for Version C (36%) which asked respondents to describe a relationship that was poor but with whom it was important to maintain a relationship. Interestingly, the response rate for Version D is only 10% higher than the response rate for Version C. The surveys were returned anonymously and therefore it is hard to determine whether there is a difference between these who responded and those who did not.

We found that the relationship with a stakeholder that requires service with the offering is important. Hence, providing good service should increase the likelihood that an exchange relationship will continue in the future. Another important area of consideration for managers is the availability of alternatives. Customers/clients who believed they had more options available to them rated their relationships as less important. Managers need to monitor their competition in order to keep customers and remain competitive. If organizations can develop trust and keep their stakeholders satisfied, they will be less likely to search for other alternatives. Surprisingly, risk and termination costs were not deemed influential in determining relationship importance. When stakeholders invest a large amount of their or their company's resources (i.e., financial risk is high) one would expect that the relationship would be more important.

This study focused on the issues related to only four stakeholder groups' relationships. It may seem that many of the issues addressed in this study are based on the common knowledge that organizations need to have good relationships with their salient stakeholder groups. However, few studies have attempted to examine not only what determines the importance of organization-stakeholder relationships, but also when they should be important. This study addresses those questions. The presentation will present the results in greater depth and discuss the implications for strategy and managers.

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DIFFERENTIATING PURCHASING PRACTICES OF FIRMS BASED ON INFORMATION TECHNOLOGY USE

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Nada R. Sanders, Wright State University

ABSTRACT

Purchasing has recently taken on a more prominent organizational role and its focus has shifted from strictly operational to strategic. A significant impact on the purchasing function has been the growth of information technology (IT), which has become an essential enabler of numerous purchasing activities. The purpose of this study is to profile differences in the purchasing function of firms based on their level of information technology (IT) use. Our results reveal significant differences between firms identified as having high IT usage, compared to firms with low and medium use of IT. Purchasing is found to have a significantly higher role in strategic planning and have a higher strategic focus in high IT firms. By contrast, low IT firms appear to be significantly lagging on a number of dimensions, such as use of electronic purchasing and supplier management practices. Most significantly, high technology use is found to have an impact on aggregate company performance, with a majority of high IT firms reporting significantly higher increases in global market share compared to less advanced IT firms.

INTRODUCTION

With the growing importance of supply chain management, purchasing is continuing to experience large growth and change in its organizational role (Carter, Carter, Moncxka, Slaight & Swain, 2000; Ellram & Carr, 1994; Handfield & Nichols, 1999; Monczka, Peterson, Handfield & Ragatz, 1998; Monczka, Trent & Handfield, 1998). The role of organizational purchasing has increasingly been evolving from tactical concerns to a more strategic role, as effective management of sourcing decisions and supply chain management become ever more critical. This change in the focus of organizational purchasing is magnified by pressure to reduce costs and time-to-market, as well as increase product quality and flexibility (Carter & Narasimhan, 1996; Narasimhan & Jauram, 1998; Nishiguchi, 1990; Vickery, Calantone & Droge, 1999). As companies increasingly focus on improvements in the areas of cost, quality, and product design, they will continue to increasingly turn to purchasing and source management to play key roles (Kapoor & Gupta, 1997; Monczka, Trent & Handfield, 1998).

Closely linked to the role of purchasing is the organizational usage of information technology (IT), which can serve to enhance and promote procurement functioning and efficiency. IT is considered the backbone of supply chain management (SCM), serving as an essential enabler of SCM activities (Handfield & Nichols, 1999; Mabert & Venkataramanan, 1998). The general concept of supply chain management, based on integration of information and activities between supply chain partners, is supported by IT (Larson, 1997). As purchasing takes on a more strategic role, IT is essential in order to automate tactical processes, provide visibility of inventories and orders throughout the supply chain, and provide the information necessary for negotiating, contracting, evaluating and monitoring the supplier base.

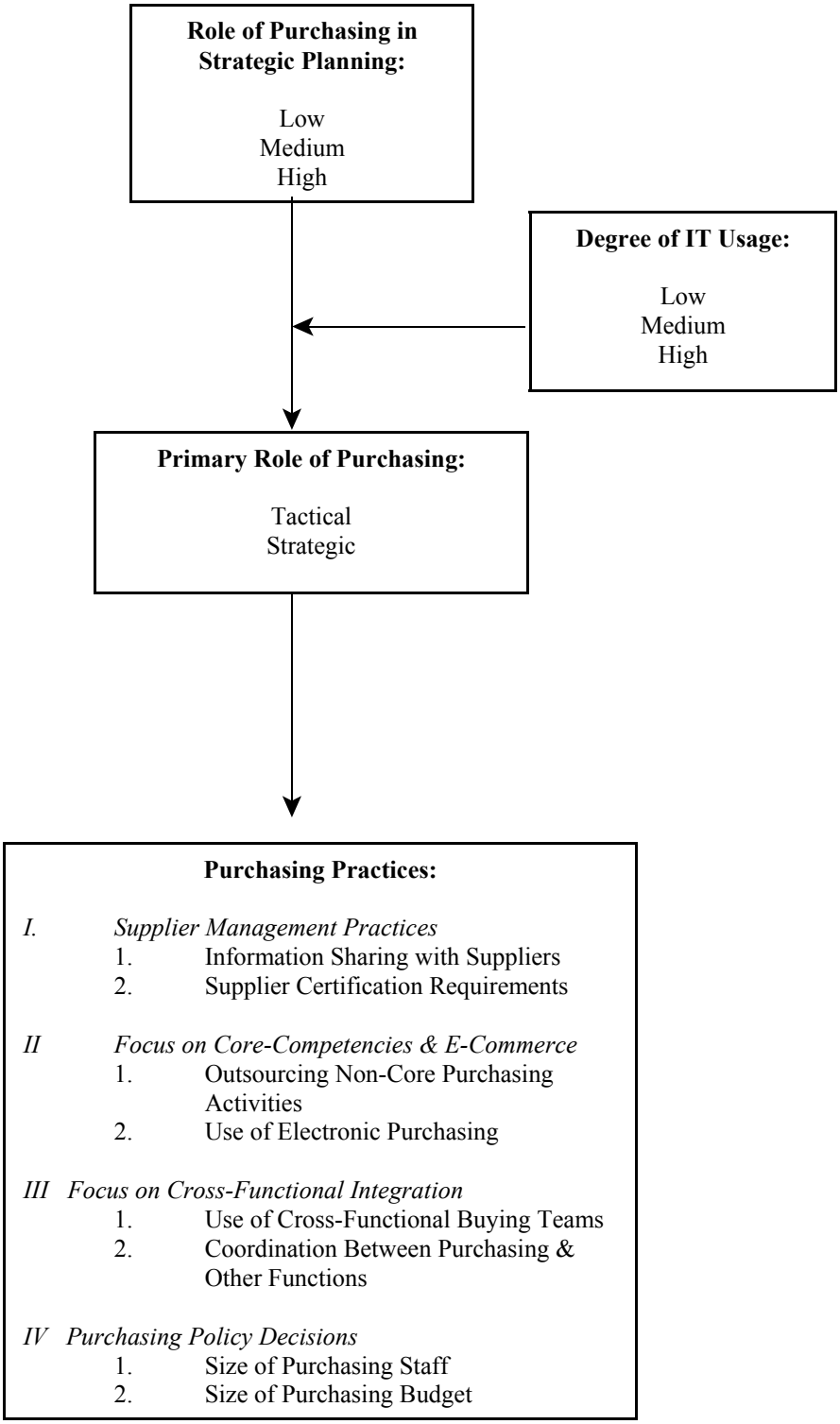
Given the importance of purchasing and the fact that a typical manufacturing firm spends roughly 60% of each sales dollar on purchased components (Krause, Pagell & Curkovic, 2001), it is vital to develop a greater understanding of the factors that influence the nature of organizational purchasing. In this study we focus on the relationship between organizational use of IT and specific purchasing activities within the organization. Specifically, the purpose of this study is to differentiate purchasing practices among U.S. firms based upon their use of information technology (IT). We link technological sophistication of firms with specific purchasing practices, ranging from purchasing's strategic role to trends in purchasing practices.

A FRAMEWORK LINKING PURCHASING PRACTICES AND IT USAGE

Our study tests the hypothesis that sophistication in IT co-exists with progressive organizational procurement practices, as the presence or absence of information technology can either enhance purchasing activities or prevent certain practices from taking place. We expect the level of a firm's IT usage to influence the types of purchasing practices a company engages in, as the role of IT is to support purchasing activities. This relationship is shown in Figure 1.

The role purchasing plays in strategic planning directly influences the degree to which purchasing engages primarily in strategic versus tactical concerns. Further, as strategic organizational decisions typically drive tactical decisions, we assume that the specific purchasing practices a company engages in are driven by purchasing's organizational role. While there are a number of specific purchasing practices that can be evaluated, our study focuses on the eight specific practices listed in Figure 1. These include the following categories: 1) supplier management practices (*information sharing with suppliers* and *supplier certification requirements*), 2) focus on core competencies and e-commerce (*outsourcing non-core purchasing activities* and *use of electronic purchasing*), 3) focus on cross-functional integration (*use of cross-functional buying teams* and *coordination between purchasing and other functions*), and 4) purchasing policy decisions (*size of purchasing staff* and *size of purchasing budget*). We evaluate the relationships of these practices relative to organization's use of IT.

Figure 1: A Framework Linking Purchasing Activities with IT Usage



METHODOLOGY

Data Collection

A survey instrument was used to collect data for this research, developed following the procedure set forth by Dillman (1978). All questions used a five-point Likert type scale to measure question response. The instrument was initially field tested by members of APICS, the National Organization for Purchasing (NAPM), and the Council of Logistics Management (CLM). Following modification, the instrument was mailed to 2,000 U.S. industrial companies.

The survey was sent to the President or CEO of primarily large manufacturing companies with annual sales in excess of $4.5 billion. Our study focused on large firms typically seen as leaders in SCM. The majority of the companies responding to the survey were manufacturing firms (84.7 percent). The remaining firms were classified as department stores/mass retailers (4.5 percent), warehouse and distribution firms (7.2 percent), and transportation firms (3.6 percent).

Of the responses received, about one third were unanswered because of a corporate policy prohibiting company participation in research studies of this nature. From the remaining 1,340 potential company participants, 116 useable questionnaires were returned. Although the response rate was only 8.7 percent, give the level at which the survey was conducted and the firm size criterion, the total response rate of 116 is quite useful. The typical respondent to the survey held the title of President, CEO, Vice President, or Director of Procurement and Purchasing, as indicated on the survey.

Testing for Non-Response Bias

In order to ensure adequacy of the survey data, out study tested for non-response bias by progressively comparing the demographics of the first and second wave of respondents(Armstrong & Overton, 1997). The logic behind this practice is that the last wave of respondents should be most like that of non-respondents, compared to the first wave. We tested dimensions of average sales, market share growth, and industry mix, with no significant differences found between the two samples. All statistical tests were performed using the Statistical Package for the Social Sciences (SPSS) for Windows.

Level of IT Usage

Respondents in the survey were asked to rate their respective companies in terms of the degree of IT usage relative to the norm for their industry. Using a five-point Likert type scale a response of *one* indicated least usage, *three* average usage, and *five* highest usage. Respondents were instructed that companies with low or high ratings would be considered below or above the

prevailing level of IT usage in their respective industries, with medium indicating the industry standard. The responses were aggregated into three broad categories: *low*, *medium*, and *high*. Respondents with the one or two rating formed the low IT category. A rating of three (the median) formed the medium IT category, and ratings of four and five formed the high IT category. Table 1 shows the division of survey respondents based on IT use, with respondents roughly evenly divided between categories.

TABLE 1: RESPONDENT LEVEL OF IT USAGE

Levels of IT Usage	Percentage Respondents (%)
Low	37.8
Medium	36.0
High	26.1

An issue of concern is the validity of using a self-reported rather than an objective measure of IT level. First, setting an arbitrary norm was not considered appropriate as standards of technology greatly vary between industry segments and would only confound errors. Second, a subjective or perceptual measure was considered important as studies have shown these perceptions to define corporate reality and influence decision making behavior (Argyris & Schon, 1996; Weick, 1995). Finally, statistical tests were performed between the self-reported measure and degree of use of six specific IT applications, such as ERP, point-of-sale data, and CPFR. These tests find consistency between the self-reported and objective measures, providing validity to the self-reported measures used.

ROLE OF PURCHASING BASED ON IT USAGE

A recent study by Carter et al.(Carter et al., 2000) forecasts an increasingly strategic role for purchasing over the next ten years, with tactical purchasing disappearing, becoming automated or outsourced to full-service providers. Our results, shown in Table 2, find that the purchasing function of many companies has indeed been elevated to the strategic level. However, marked differences appear related to the organization's use of IT, with high IT firms having a significantly higher involvement of purchasing in strategic planning. We do not find significant differences between respondents relative to the degree to which purchasing performs tactical functions. However, the degree to which purchasing performs a strategic functions is marked. In fact, the number of respondents reporting purchasing to *primarily* perform strategic functions is approximately double for high technology firms versus that of low/medium.

These results indicate that while a large number of firms still primarily involve purchasing in tactical issues, firms with high IT usage utilize purchasing for predominantly strategic functions. We speculate that in these latter firms, technology is being used in part to automate tactical procurement functions. In addition, high IT firms have a greater awareness of the importance of purchasing in strategic decisions, and have elevated purchasing to a higher organizational level. Our results do not prove that high IT usage directly promotes greater involvement of purchasing, or vice versa. Rather, these results show that IT usage and organizational importance of purchasing co-exist, with the former most likely serving as an enabler to the latter.

TABLE 2: ROLE OF ORGANIZATIONAL PURCHASING BASED ON IT USAGE

Role of Purchasing	Level of Involvement [1] (given as a percentage of respondents)			
	Low	Medium	Somewhat High	Very High
1. Role of Purchasing in Strategic Planning				
Low IT	28	22	30	20
Medium IT	29	41	18	12
High IT	15*	27	33	25*
2. Purchasing Primarily Performs Tactical Functions				
Low IT	18	22	40	20
Medium IT	8	21	39	32
High IT	20	23	33	24
3. Purchasing Primarily Performs Strategic Functions				
Low IT	21	31	28	21
Medium IT	5	44	23	28
High IT	11	4*	37	48

[1] These questions are based on a five-point scale that included an option for *none*; As there were no responses to this category it was omitted here due to space consideration.
* Significant differences between high IT firms and medium/low IT firms at 0.05 level using Levene's test for inequality of means.

DIFFERENCES IN PURCHASING PRACTICES BASED ON IT USAGE

In this section we look at changes in specific procurement practices experienced by firms over the past three years, and how they differ based on IT level. These results are shown in Table 3. High IT firms report experiencing a significantly higher increase in all categories of variables compared to medium and low IT firms, with the exception of purchasing policy variables. A

significantly greater number of high IT firms increased information sharing with their suppliers over the past three years, compared to low/medium firms. Similarly, these firms had a significantly higher increase in their supplier certification requirements, suggesting that high use of IT co-exists with higher levels of supply chain management practices.

High IT firms are found to outsource non-core purchasing activities to a greater extent than other firms. Also, not surprising, higher use of IT also appears related to a higher use of electronic purchasing. All firms are experiencing higher use of buying teams, but high IT firms have a greater usage of cross functional teams and significantly higher coordination between purchasing and other business functions. The only area that did not find significant differences between firms is that of purchasing policy decisions. This finding may suggest that the higher responsibility of purchasing has yet to be matched by higher resource allocation.

TABLE 3: PURCHASING PRACTICES VERSUS IT USAGE

Purchasing Activities	Degree of Change (given as a percentage of respondents)				
	Large Decrease	Small Decrease	Unchanged	Small Increase	Large Decrease
1. Information Sharing with Suppliers					
Low IT	0	0	18	62	20
Medium IT	0	0	13	59	28
High IT	0	0	11	48	41*
2. Supplier Certification Requirements					
Low IT	0	0	40	34	26
Medium IT	0	3	18	49	30
High IT	0	0	11	48	41*
3. Outsourcing Non-Core Purchasing Activities					
Low IT	0	3	86	8	3
Medium IT	3	3	82	10	2
High IT	0	0	78	22*	0
4. Use of Electronic Purchasing					
Low IT	0	0	45	47	8
Medium IT	0	0	31	54	15
High IT	0	0	22 *	50	28 *

TABLE 3: PURCHASING PRACTICES VERSUS IT USAGE					
Purchasing Activities	Degree of Change (given as a percentage of respondents)				
	Large Decrease	Small Decrease	Unchanged	Small Increase	Large Decrease
5. Use of Cross-Functional Buying Teams					
Low IT	0	0	32	45	23
Medium IT	0	0	16	49	35
High IT	0	0	7	48	44*
6. Coordination Between Purchasing and Other Functions					
Low IT	0	0	9	73	18
Medium IT	0	0	21	49	31
High IT	0	0	4*	44	52*
7. Size of Purchasing Staff					
Low IT	10	35	40	15	0
Medium IT	8	26	26	38	2
High IT	7	32	20	33	8
8. Size of Purchasing Budget					
Low IT	0	23	31	46	0
Medium IT	8	12	31	46	3
High IT	0	19	30	47	4
* Significant differences between high IT firms and medium/low IT firms at 0.05 level using Levene's test for inequality of means.					

DISCUSSION AND MANAGERIAL IMPLICATIONS

The purpose of our study was to differentiate purchasing practices of firms based on level of IT usage. Our results reveal significant differences between firms based on this dimension, with high IT firms having greater involvement in advanced purchasing practices compared to firms with lower levels of technological sophistication. The purchasing function of these firms tends to have more of a strategic rather than tactical orientation. High IT firms are found to be more likely to outsource non-core purchasing activities, engage in electronic purchasing to a greater extent, and have an overall greater supply chain management focus.

In order to assess the impact high IT use has on aggregate company performance, our study correlated level of IT use with changes in a company's global market share over the past three years.

These findings are shown in Table 4. Over 75 percent of the respondents reported an increase in their company's global market share over the past three years. However, our study finds companies with high IT usage to be the largest benefactors of this market success.

TABLE 4: LINKING LEVEL OF IT USE WITH CHANGES IN MARKET SHARE

LEVEL OF IT USE	CHANGE IN MARKET SHARE (percentage of respondents)		
	No Change or Decrease	Modest Increase	Substantial Increase
Low IT	29	54	17
Medium IT	26	49	25
High IT	19*	48	33*

* Significant differences between high IT firms and medium/low IT firms at 0.05 level using Levene's test for inequality of means.

These findings have potentially serious implications for managers, revealing a divide in purchasing practices and IT usage of firms. With exponential growth of IT capability and its widespread use, this gap between firms can be expected to grow. Companies are currently investing millions of dollars in technologies such as Enterprise Resource Planning (ERP) systems, real time access to point of sales data, web based auctions and catalogs, electronic bulletin boards for suppliers, as well Collaborative Planning, Forecasting, and Replenishment (CPFR). Firms that are lagging in IT capabilities and progressive procurement practices may soon find themselves in competitively weak situations from which it may be difficult to recover. This is not to say that firms should immediately rush out to randomly purchase information technologies. Studies have shown that while information technology can serve as a competitive weapon, choice of specific technologies needs to be tied to an understanding of the needs of the business (Grover & Malhotra, 1997;Kathuria, Anandarajan & Igbaria, 1999). Still, firms need to become aware that in order to remain competitive their organizations will need to elevate and expand the role of the purchasing function. In turn, organizational IT capabilities will need to play a key role in enabling the purchasing function to be utilized to its full potential.

ENDNOTE

This study was funded by a research grant from the Department of Defense, Defense Acquisition University, the Naval Post Graduate School, Monterey, California.

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Appendix I

Market Share, Information Technology, and Procurement Areas of the Survey

MARKET SHARE

1. What changes has your company experienced in market share over the past 5 years?

□	□	□	□	□
Substantial Decrease	Modest Decrease	No Change	Modest Increase	Substantial Increase

INFORMATION TECHNOLOGY

This question pertains to organizational use of Information Technology (IT).

2. Relative to industry standards, how would you rate your company's overall level of technological sophistication?:

1	2	3	4	5
Low		Medium		High

ROLE OF PROCUREMENT

3. Please rate the level of priority given to the procurement function by your company in its strategic planning process:

1	2	3	4	5
Low		Medium		High

4. Please indicate the extent to which the purchasing function in your firm performs the following functions:

	1	2	3	4	5
Tactical Functions (e.g. transaction tracking; order processing.)	None	Little	Some	Mostly	Primarily
Strategic Functions (e.g. strategic supplier development; market evaluation.)	None	Little	Some	Mostly	Primarily

RECENT TRENDS IN PROCUREMENT

Please indicate how you would evaluate trends in your company over the past 5 years relative to the following issues:

	Large Decrease	Small Decrease	Unchanged	Small Increase	Large Increase
Number of suppliers	☐	☐	☐	☐	☐
Sharing information With suppliers	☐	☐	☐	☐	☐
Supplier Certification Requirements	☐	☐	☐	☐	☐
Use of Third Parties for Purchasing	☐	☐	☐	☐	☐
Use of Buying Teams	☐	☐	☐	☐	☐
Use of Cross-Functional Teams	☐	☐	☐	☐	☐
Coordination Between Purchasing & Other Business Functions	☐	☐	☐	☐	☐
Use of E-Commerce For Purchasing	☐	☐	☐	☐	☐
Size of Purchasing Staff	☐	☐	☐	☐	☐
Size of Purchasing Budget	☐	☐	☐	☐	☐
Use of Purchase Cards	☐	☐	☐	☐	☐

TODAY'S AIRLINES SHOULD ADOPT A LOW-COST STRATEGY: CAN THIS POPULAR IDEA BE SUPPORTED BY THE FACTS?

Richard Cobb, Jacksonville State University

ABSTRACT

Airline strategic planners have viewed growth as their overriding objective as they have considered changes in customer markets and operations since WWII. This growth has been largely accomplished through an industry focus on differentiation with the exception of a few noteworthy carriers that have used a low-cost focus to achieve market growth. This research questions whether a strategy designed to achieve growth based on low cost has moved beyond being considered an exception to now being considered the norm for the airline industry. The methodology for answering this question involved an analysis of the airline industry's modern era business cycles and included an analysis of changing market forces, opportunities, and threats. From this analysis, we have to qualify our conclusions by first noting that the answer to the research question was not as obvious as the popular literature would suggest. Documented support for a low-cost strategy is summarized, and conclusions are drawn as to the long-term attractiveness of this strategic option.

INTRODUCTION

The current airline industry financial cycle began in mid-2000 (Lorenzo, 2001) with the declining national economy and a sharp drop in airline revenues and has received wide coverage in the popular press, scholarly research, and business media. Though currently in decline, the glamour nature of the industry has always inspired optimism, even as investors have seen wide ranging swings in profits and losses over an extended period. When viewed in the context of financial performance, reported research finds that the profit margin for the industry averaged only 1.6% during the 1980s (Poling, 1990) and only 1.0% for the period between 1990 and 2000 (Samuelson, 2001) before recording industry-wide losses of $7 billion in 2001(Airline of the year, 2003), $7.5 billion in 2002, and $5.3 billion in 2003 (Velocci, 2004). In fact, the only member of the industry to have long-term profits has been Southwest Airlines, which has had thirty consecutive years of operating profits (Azoulai, 2000; Airline of the year, 2003). Low profitability is, then, a traditional

industry theme and is discussed today by some business analysts who write about industry problems and solutions, business cycles and trends, or government regulations and controls in a manner similar to that of writers in previous periods. However, a review of the literature finds a recurring theme linking profitability to an industry-wide, low-cost strategic focus. For example, Costa, Harned, and Lundquist (2002) observed that while some airline analysts are optimists and assume that the industry has learned how to manage cyclic activity, others view the current industry climate and observe that dramatic long-term changes in both fleet composition and airline networks will require traditional carriers to adopt a service model based on an improved cost structure. Donoghue and Geoff (2003) offered additional evidence to support this conclusion based on both their analysis of recent statistics collected by the Air Transport Association (ATA) and on their review of current sentiments expressed by airline industry leaders. In their findings, they noted that the ATA predicted a reduction in air travel spending and that many of today's airline industry leaders strongly support a long-term planning model built around a cost structure that would yield better profitability. This view is consistent with other research findings that confirm the widely held consensus that restructuring, based on cost, must be at the heart of the industry's long-term survival strategy (Forsberg, 2001; Kangis & O'Reilly, 2003). The fact that the popular press is also aware of the airline cost issue can best be exemplified by an editorial in the Chicago Tribune, which addressed the airline financial landscape and noted that low fares and electronic shopping have "irrevocably shifted" (Airlines: Cut Cost, 2002, p. 28) the planning environment and created other options for today's business passenger. Recognizing this new environment, The Economist suggested that traditional network carriers are "not just grappling with a cyclical slump in the basic airline business model but will have to reinvent themselves or go out of business" (Silver linings, 2004, p. 68).

So, it is obvious from today's literature that airline managers are advised to see more than the usual suspects when considering industry problems. However, since most major airlines have successfully flown through past financial cycles without adopting low cost strategies, what facts today would support an industry-wide shift from a strategy emphasizing growth and differentiation to one emphasizing standardization and cost control? To answer this research question, this paper will review both the past and present operating environment of the U.S. airline industry and will contrast the current financial cycle with well-documented past cycles. Important factors considered in this review will include the environmental opportunities and threats offered by new technology as well as the impact on long-term strategy caused by the effects of industry life cycle and the threat of substitutes for airline business travel. Finally, in answering the research question, two overriding factors were considered: the redefined business travel climate since 9/11 and the continued refinement of e-commerce and technology tools. This research concludes that these factors have come together to influence airline strategy in ways not seen since the beginning of the modern era of the U.S. airline industry.

OPERATING ENVIRONMENT: ELEMENTS OF CHANGE

Operating Environment: The Modern Era

The foundation for the modern era of the U.S. airline industry began during WWII with the construction of airports and the development of modern transport aircraft. Following the war, hundreds of these modern transports were declared surplus, and personnel trained during the war stood ready to staff this equipment as airlines added new routes to their networks. With these resources in place, air travel was now possible to most U.S. and international destinations, and the industry evolved as both its technical capability and the scale and scope of its customer base grew. For the increasing number of business travelers, the airlines represented a value-added activity that could bring faraway customers or corporate subsidiaries within easy reach of each other. For leisure travelers, visiting distant points became a viable option, even those with limited travel time. During this growth period, early prop-driven aircraft were replaced by jet aircraft that were later augmented with higher capacity, wide-bodied jet aircraft as improvements to both speed and efficiency contributed to growth. A growth strategy built around differentiation seemed to be the only logical direction for airline managers during this early period as they witnessed a dramatic increase in passenger traffic. Banks (1993) referred to this period as the industry's "gravy days" (p. 40) and observed that as the airlines took advantage of technological improvements, they saw an average passenger growth rate of 13% per year while realizing a 50% drop in operating costs per seat mile for the period between 1950 and 1973. However, airline industry growth has not been consistent or uniform over time. In fact, Costa et al. (2002) observed that the industry has experienced major economic cycles with each cycle having its own complex set of environmental forces, lasting from three to five years during each decade beginning with the 1970s. These cycles, coupled with the current downturn and threat of future industry downturns, give greater emphasis to the need for better industry analysis and strategic planning. The following sections will review this cyclic activity and will note that in pursuing solutions to the operating problems of these periods, both marketing and operations decisions would receive greater emphasis. This review will aid in better understanding the unique role that cost control plays in the current industry cycle.

Operating Environment: Marketing Innovation

Kaynak and Kucukemiroglu (1993) reported that during the 1970s the airline industry considered marketing to be "a comparatively unimportant activity" (p. 32). However, events of the 70s would set the stage for dramatic changes in the operating structure of the industry. The stable growth pattern that developed after the introduction of new jet service was interrupted in 1973 by the Middle-East oil embargo. The ATA reported that this embargo triggered a rapid increase in fuel prices that helped increase the rate of inflation prior to a subsequent energy crisis and downturn in

the national economy (The Airline Handbook, 2003). Gowrisankaran (2002) explained that as the industry entered the 1970s, route structures and ticket pricing policies were regulated by the Civil Aeronautics Board (CAB) and were controlled in a manner similar to that of a public utility with air travel treated as a public convenience or necessity. In a historical review of the 1970s, the ATA reported that in an attempt to maintain profit margins during the energy crisis years, the CAB responded by approving fare increases and limiting the introduction of new routes for a four-year period (The Airline Handbook, 2003). However, these efforts were unpopular and unproductive because, even with higher fares, the industry would continue to suffer from the combined effects of over capacity, a weak national economy, and poor earnings recorded for most of the 1970s. During this period, public pressure and dissatisfaction with air service continued to grow until the role of government in airline regulation was drastically changed in October of 1978 with the passage of the Airline Deregulation Act (Gowrisankaran, 2002). This act created a new control environment that allowed greater flexibility in ticket pricing and route planning as the industry now came under the control of the Department of Transportation (DOT). The DOT's regulatory authority would focus primarily on issues of safety and operating procedures in determining which airlines should operate. Kaynak and Kucukemiroglu (1993) reported that in this new marketing environment, airline service began to change "from a sellers' market to one of a buyers' market" (p. 33) as incentives to innovate brought new carriers and new marketing ideas into the industry. Gowrisankaran (2002) suggested that large fluctuations in the airline economy presented an environment that offered new opportunities for those carriers willing to innovate. Marketing innovations became an integral part of this new deregulated environment as the number of certified air carriers ranked by the CAB in one of the four main categories (e.g. major, national, large regional, or medium regional) increased from 37 in 1978 to 100 by 1984 (CAB, 1978 & 1984). Also, between 1978 and 1999 the number of carriers using large aircraft doubled while the number of flight segments with a choice of two or more carriers increased from 66% to 85% in the deregulated environment (The Airline Handbook, 2003). This period would usher in new marketing concepts and programs as carriers tried to fly successfully through each business cycle.

Operating Environment: Deregulation

Both excess capacity and increased competition are blamed for the decline in the profitability of the airline industry in the 1980s as industry deregulation allowed new low-cost carriers to enter the market and begin to change the competitive landscape (Banks, 1993; Costa et al., 2002). In this competitive climate, most airline strategies continued to stress growth, with the established carriers focusing on market differentiation using new jet service and the newer start-up carriers generally entering the market using low-cost models. Common elements of these low-cost carriers generally included a simple, no-frills product positioned to attract the price-conscious passenger while following an operational plan designed to reduce unit costs (Impact of Low Cost, 2002). For

example, PeopleExpress was started in 1981 and developed a growth strategy with low fares supported by a plan to maintain low operating costs. By 1986, it had successfully grown its market share to become the fifth largest carrier while maintaining a 75% aircraft load factor compared to an industry average of 55% (Smith, Gunther, Rao & Ratliff, 2001). In reacting to this new type of competitor, established carriers generally chose not to pursue low-cost strategies but chose instead to introduce new programs designed to differentiate their service, improve loyalty, increase load factors, and protect space for business travelers. Several innovative marketing and operational strategies were linked to enable the industry to succeed in these efforts. One of the earliest of these marketing strategies, the AAdvantage frequent flyer program, was introduced by American Airlines in 1981 and is credited by many as being the single most successful marketing program in airline history (Smith et al., 2001). This strategy was successful because it addressed the issue of customer loyalty in the new price competitive environment. Although tickets had been shown to be price elastic, American Airlines managers did not think that low prices alone would win and keep their best customers. Through their Sabre reservation system, they were able to track their best customers based on mileage. A scale was developed to offer free tickets to any destination or offer service upgrades to customers based on the number of miles flown. This bold move differentiated its service and was successful in retaining American's higher paying, frequent (i.e., business) travelers and in developing the largest frequent-flyer program in the industry (McDonald, 2001).

Efforts to protect the business travel market of the 1980s, while important, did not cause airline managers to embrace automatically a low-cost strategy or to forget about growth strategies in other market segments. Airline managers knew that in order to increase load factor and to improve yield, they would have to differentiate their service in ways that would attract more leisure travelers and compete directly with the low-cost carriers.

Operating Environment: Growth of the Leisure Market

During the 1980s, the number of leisure passengers grew as the proportion of passengers classified as business travelers declined (Banks, 1993). American Airlines, aware of the success of carriers like PeopleExpress, considered the leisure market trend and worked to improve further both yield and load factors through the introduction of its Ultimate Super Saver campaign in 1985 (Smith et al., 2001). The result was full service at discount prices for leisure travelers willing to accept certain purchase restrictions. This program was designed to grow market share while protecting seats for use by business travelers who might buy close to the flight date and be willing to pay more. By having access to historical flight demand and passenger booking data, company management science specialists were able to use operations research tools to predict seat availability and to alter seat price to reflect projected demand over time. This activity, known as yield management, helped to determine how many seats to save for late-booking, higher paying customers and how many seats to make available to those willing to accept certain restrictions for a lower fare (Belobaba, 1987).

Smith et al. (2001) reported that over a three-year period beginning in 1985, American Airlines used yield management to generate over $1.2 billion in additional revenues. In a review of the operating environment of the airline industry, Costa et al. (2003) credited yield-management techniques with improving revenues and helping to drive the industry recovery from the 1980s business cycle. By using yield-management techniques following deregulation, the major carriers were generally able to defend against the incoming tide of discount carriers. Low fares supported by low cost alone seemed to hold no assurance of success during this turbulent period. Records of the ATA show that 87 airlines filed for bankruptcy protection during the 1980s (The Airline Handbook, 2003). PeopleExpress, which had been so successful with its low-cost strategy, saw its aircraft load factor shrink to 25%, and the company was eventually sold to Continental Airlines in 1987 (Smith et al., 2001). Carriers classified in the "major" category survived this financial cycle without adopting low-cost strategies and actually increased in number from 10 in 1978 to 12 in 1984 (CAB, 1978 &1984). According to Bonne (2003), many of the discount carriers of this period failed because of flaws in their business models or because they were squeezed out by the marketing efforts of the major carriers. Dubin (1984), in reviewing the performance of new carriers for the period immediately following deregulation, attributed their high rate of failure to their "weak management, inept marketing, and under capitalization" (p. 75). As the industry entered the 1990s, the top ten airlines used similar pricing plans based on a differentiation strategy of full service with restrictions and were successful in controlling 90% of the market (Das & Reisel, 1997). The decade of the 1980s, known for the introduction of important marketing and operational innovations, would also mark the point in time when the measured growth of the industry would begin to stabilize and strategic planners would begin to consider life-cycle effects.

Operating Environment: Industry Life Cycle

For any industry, an analysis aimed at determining the stage of its product life cycle is a critical factor for strategic planners. Anderson and Zeithaml (1984) provided an example of this type of analysis with their in-depth historical summary of works linking life-cycle theory and strategy. They noted that the stage of a product's life cycle is a fundamental variable in selecting the appropriate business strategy. Das and Reisel (1997), in their analysis of life-cycle theory, discussed the characteristics of maturity and noted that as the product becomes standardized and there is an over-capacity condition, demand is mass-market driven and technological innovation is not concentrated. They found that when no airline has a technological advantage over other competitors, competitive advantage is achieved through "cost efficiencies" (p. 89) as assets become more industry specific and passengers tend to select carriers largely on the basis of price. Additionally, they found that in these market conditions, it is difficult to raise prices because the customer has "near perfect information about fare prices, marketing, and promotion" (p. 90) and one seat on one airline is a nearly perfect substitute for another seat on another airline. The importance

of these signs of industry maturity was best summarized by Kluyver and Pearce (2003) when they observed that "while industries experiencing growth may mask certain errors in strategy, a mature industry is less forgiving of such mistakes" (p. 70).

Did the airline industry begin to mature in the 1980s? To answer this question, Poling (1993) used data from a Federal Aviation Administration (FAA) forecasting conference and compared industry revenue with Gross Domestic Product (GDP). He found that airline revenue grew from 0.65% of GDP in the 1960s to 1.00% of GDP by the 1980s and then remained steady. His conclusion was that stable revenue growth made the industry more susceptible to economic cycles. Other research efforts have measured percentage growth rates based on passenger-booking statistics and found a long-term decrease in those growth rates. As previously reported, Banks (1993) found that during the period from 1950 and 1973, passenger traffic grew at a rate of 13% per year. Later, Costa et al. (2002) reported that the passenger growth rate decreased to a 6% annual growth rate during the 1980s and further decreased to only a 4.7% annual growth rate during the period from 1990 to 2000. With the maturing airline market, the successful passenger growth strategies of the past became less effective as the rate of passenger growth tended to be equal to the rate of economic expansion (James, 1993). Additional evidence of this decline in passenger growth can be seen in the aircraft manufacturing industry where today only the Boeing Company and Airbus Industries divide a market in which each continues to battle for at least 50% of the market for large transport aircraft (Lunsford, 2004). In a related article, Lucas (2001) noted that the decrease in the rate of passenger traffic growth has resulted in strategic plans being changed for some in the aerospace industry. His report examined the Boeing Company and its efforts to diversify into support services based on company predictions of a maturing market for new aircraft. For the major airlines, these symptoms of a mature market led to a shift in emphasis from passenger growth to one of revenue growth as they began to use more aggressive yield-management techniques designed to increase revenue from business travelers. Das and Reisel (1997) conclude that this type of action by managers in a mature industry is to be expected as they "will see the future relative to the past and will be less likely to be proponents of discontinuous strategy options" (p. 88). Airline Business reviewed the competitive climate of the airline industry and found that "much of the US market would appear to be already mature" (Reflections, 2002, p. 70).

THE BUSINESS TRAVELER

As the industry transitioned into maturity during the 1980s, the cost improvements associated with jet aircraft operations tended to stabilize as major airlines found that they could rely less on falling costs to maintain margins (Banks, 1994). It was in this operating environment that the business traveler became a critical component of airline revenue strategy (Banks, 1993). With the need to make unplanned trips on short notice, the business traveler became the prime candidate for

the application of yield-management techniques. Yield management worked because customers placed high value and utility on timely air travel. During the 1990 to 1995 industry cycle, business travelers began to accept even higher fares for tickets purchased close to the flight date. This acceptance resulted in improved yields that enabled the industry to regain profitability by 1995 (Costa et al., 2003). However, the relative number of full-fare paying travelers had declined from a reported 52% of total passengers in 1982, to 37% by 1992 (Banks, 1993), and to 23 % of total passengers by 2001 (Costa et al., 2003). To offset this decline, major airlines placed less emphasis on cost control and greater emphasis on yield-management techniques. These techniques grew in sophistication and tended to keep revenue and margins up during the growing economy of the late 1990s as the airlines became more dependent on high paying, frequent business travelers. Their presence in the ticket pricing equation and their willingness to pay even higher prices allowed revenues to grow. For example, one survey reported that on any given flight, the ratio of the highest priced tickets compared to the lowest priced tickets could be as high as 20 to 1 for the major airlines (Webbed Wings, 2001). In a specific example, Carey (2002) reported that United Airlines estimated that business travelers generated 46% of its revenue while representing only 9% of its customers. By focusing on yield from the business travel market and achieving this documented level of revenue growth success, airline strategists have found it difficult to reflect on an uncertain future and change to a mature industry strategy where cost control and standardization would be important to success.

THE CURRENT INDUSTRY BUSINESS CYCLE

Using recent ATA statistics, Donoghue and Geoff (2003) reported that the U.S. airline industry is currently generating revenues of 0.9% of GDP. These revenues mirror the 1980s industry average rate of 1.0% of GDP reported by Poling (1993). At that time, Poling accurately concluded that future improvements in communications technology would decrease the volume of business travel while the standard of living, on the rise throughout the world, would tend to increase the volume of lower yielding leisure travel. Current data support his conclusions and also show that in the overcapacity condition of the current business cycle, even with marginal improvements in yield management, there is little hope that the combination of higher operating costs and declining business/leisure mix will lead to an industry recovery (Callahan, 2002; Loranzo, 2001; Tully, 2003). Lunsford (2004) concluded that the current overcapacity condition is expected to be a long-term industry problem because over 500 of the currently unused 2100 aircraft (now parked in western U.S. storage areas) are capable of being returned to service. At a time when businesses are considering more widespread use of travel substitutes, excess capacity is causing many carriers to offer lower fares and corporate travel discounts of 20 to 30 percent in an attempt to maintain market share (Costa et al., 2003).

The Threat of Substitutes

Reviewing the business travel market, Belden (2002) reported that airline executives have begun to accept that the current industry problems are caused by more than the economy and that the complex airfare structure has driven away some business travelers and is helping to support a wide range of travel substitutes. Mechan (2002) supported this conclusion in a summary of a recent air travel survey that found that substitutes for air travel have become commonplace in business travel budgets.

Porter (1980) concluded that substitutes pose a serious threat whenever the relative switching cost is low. Today, we see the dollar cost of some popular substitutes for air travel coming down just as we see the effects of added security and other time delays reducing the value of traditional air travel for the business passenger. For example, Caton (2004) found that new web-conferencing technology is available today for less than the cost of one business class ticket. Just as the value of air travel grew and made it a substitute for rail and ship travel during the growth period following WWII, today's airlines must determine which, if any, viable substitutes are ready to compete for the business traveler. In addition to the market threat posed by low-fare carriers, two categories of substitutes threaten the traditional airline business travel market. These substitutes - business jets and video/information technology - are today receiving widespread recognition and investment.

Business Jets

The use of general aviation (GA) aircraft, the category of planes in which business jets are listed, expanded rapidly after WWII, beginning with single- and twin-engine prop aircraft and evolving into corporate jet aircraft by the 1960s (Olcott, 2004a). From modest beginnings, the fleet of corporate aircraft has grown to over 10,500 aircraft according to the General Aviation Manufacturers Association (GAMA) (General Aviation, 2003). Corporate aircraft come in all sizes and seating capacity and can serve over 5000 airports while U.S. scheduled airlines serve only 429 airports (Industry Facts, 2004; Olcott, 2004a). Corporate aircraft may be wholly owned, fractionally owned, leased, or chartered. Carey (2002) refers to the fractional jet option as the "ultimate upgrade" (p. A1) and concludes that the use of this type of aircraft represents a threat to today's larger airlines. The business jet, with its many advantages in convenience and savings of executive time, is a viable substitute for high-end business travel (Airlines Likely, 2001) and is expected to take 10 % of the business passenger market away from the airlines by 2005 (Costa et al., 2002).

Today's cost of business travel, measured in terms of dollars and travel time, has spawned a new type of aircraft and threat to traditional airline service. This substitute, known as the minijet or very light jet (VLJ), will soon be available to the budget-minded business traveler. Little is known about the degree of threat that this new design poses for the airlines. However, initial performance data indicate that these aircraft will offer point-to-point service and will cruise at over

400 miles per hour while operating for as little as $1.00 per mile (Olcott, 2004b). There are currently eight companies, ranging from the traditional Cessna Aircraft Company to the nontraditional Honda Motor Company, involved in the development of these 6- to 8-passenger designs (Lunsford, 2004). Stone (2003) refers to these manufacturers as a "new generation of aviation entrepreneurs seeking to change the air travel equation and to mint a new class of airplane and air travel" (p. 60). At present, over 2,500 orders have been placed for the various designs of the current manufacturers, with the first planes scheduled for delivery beginning in 2005 and having a potential demand estimated to be over 10,000 units by year 2020 (Olcott, 2004a). Supporters see the minijet option as an economical way to save time and avoid airport congestion for travelers who desire to connect quickly to all parts of the country. The development of these aircraft is but one more indication of the threat of potential changes ahead in the business travel market.

Video/Information Technology

Evidence that videoconferencing impacts airline business travelers has been a factor in airline strategic planning for many years. For example, as early as 1979, Boeing Computer Services used videoconferencing as a substitute for air travel in its efforts to save time for engineers (Nordwell, 1990). Saving time was also the focus for Hughes (1993) when he reported the results of a FAA funded study on the potential impact of videoconferencing on passenger demand at Boston Logan Airport. He found that using videoconferencing to save time, particularly the time needed for visits by employees to other company facilities, was predicted to impact business trips and could result in a 13% to 23% reduction in business travel by 2010. Because of the inconvenience of security delays and travel time, many companies today are turning to videoconferencing to replace airline travel. For example, Callahan (2002) reported on the results of a survey by the Business Travel Coalition and found that 61% of corporate travel executives say that they have urged their employees to increase their use of webcast and conference calls rather than travel. According to Adams (2001), most videoconferencing firms saw surges in customer demand of 30% to 50% in the days following 9/11.

DISCUSSION

This research questions whether a strategy designed to achieve growth based on low cost has moved beyond being considered an exception to now being considered the norm for the airline industry. The methodology for answering this question involved an analysis of the industry's modern era business cycles and changing market forces, opportunities, and threats. Based on this review, conclusions would have to be qualified by first noting that the answer to the research question was not as obvious as the popular literature would suggest.

No one expects business jets, videoconferencing, or web conferencing to replace completely airline business travel. However, this research finds that dependence on both the business traveler and on greatly inflated short-term ticket prices is at the center of the long-term strategic threat for most traditional carriers. Banks (1993), one of the first to observe this threat, reviewed the role of the business traveler in airline pricing strategy during the 1980s and found that most carriers of that time would have realized zero profitability if they had lost just one out of ten business passengers. Today, with the industry experiencing its third major business cycle in the last 25 years, there is an increased risk of loss because most traditional marketing and operational remedies are not available. This review of industry cyclic activity finds that dramatic changes have occurred in the competitive landscape. The number of certificated carriers, routes, and airports served by multiple carriers has increased as carriers following low-cost operating models entered the industry after deregulation and had considerable influence in shaping the strategy of major carriers. Even with this influence, major carriers increased in number during the 1980-1984 business cycle as they survived without adopting low-cost strategies. This paper has already documented that some new discount carriers failed because of flawed business models or because they were squeezed out by the marketing efforts of the major carriers (Boone, 2003; Dubin, 1984). During the 1980s, the strategic choices exercised by the major carriers generally allowed them to avoid adopting low-cost strategic models and still control 90% of the market at the end of the decade (Das & Reisel, 1997). Their creative marketing efforts resulted in the frequent-flyer and leisure- fare programs that successfully protected market share while the first use of yield- management techniques helped to recover more revenue from business travelers. Entering the 1990s, further evidence shows that the industry was maturing and that airline service was becoming more standardized with the competitive advantage shifting to those carriers who achieved cost efficiencies.

This review of the 1990 to 1995 industry cycle observed that the major carriers were successful in holding off most low-cost carriers even though the low-cost strategies of some competitors had become a permanent fixture in the industry landscape. For example, Southwest Airlines, a benchmark low-cost carrier, had become so successful in its low-fare promotion by the early 1990s that when it began to operate flights out of any airport, the resulting effect on all ticket prices undermined the ability of major carriers to charge the higher prices needed for them to recover their higher operating cost. The FAA called this phenomenon "the southwest effect" (Bennett & Craun 1993). Today, low-cost carriers control about 20% of the U. S. airline market, and analysts expect this market share to expand to 40-50% in the future (Velocci, 2004). Ott (2004), in his analysis of the perils faced by discount carriers, noted that this expansion will not be without risks as the industry faces the harsh tests of reorganization and reconstruction. However, Tretheway (2004) observed that today's low-cost carrier model "is not a fad, but rather a business model with a permanent role in the marketplace that undermines the price discriminating ability of the full cost carriers and is the most important pricing development in the industry in the past 25 years" (p. 13).

In a maturing market, industry planners should not depend on growth to attract new business customers, nor should they depend on management science specialists to find dramatic new opportunities to increase yield. This research concludes that a low-cost strategy should no longer be considered an exception but rather should become the norm for the airline industry. Most past options that have enabled the industry to avoid embracing a low-cost strategy are simply not available today. The major airlines need to change fundamentally their concept of the industry and understand that once benchmarked, today's low-ticket prices will be difficult to move up (Donoghue, 2003). Today's airline passenger, aided by better information technology and the internet, has gained the advantage over the airlines in ticket prices. Becoming profitable with a benchmark 2 to 1 spread from highest to lowest ticket price for a given flight should become a goal (Webbed Wings, 2001). Lower prices must be supported by lower operating costs while maintaining a service level needed to attract and keep business travelers.

LOW-COST SUPPORT AND APPLICATION

There is no magical formula for achieving a low-cost operating model. The literature offers many suggestions aimed at cost reduction, and the following section summarizes both the support for and examples of cost-cutting strategies found to be successful today. This summary is not offered in any ranked order because market and route structure will dictate application for each carrier.

Information Technology (IT)

Today, the leading low-cost carriers have embraced IT applications (Burns, 2001). For example, at JetBlue Airways all calls to its unique reservation unit are directed to a reservation specialist working out of his or her home (Ford, 2004). In this example, internet-based technology is a vehicle that has allowed a low-cost carrier to connect successfully e-commerce through strategy to its core business. Moon and Frei (2000) suggested that airlines adopt a co-production concept of e-commerce. They concluded that flight and ticket price information be revealed in an IT system designed for ticket shopping that helps remove the mystery and reduce the cost of making a flight reservation. In an example of this logic, Schwartrz and Zea (as cited in Smith et al., 2001) reported that America West Airline reduced its average per-ticket distribution costs from $23 for tickets sold in a traditional manner to $6 for direct internet sales. This example supports the overall IT goal of providing the online data and information needed by the customer while cutting cost and improving efficiency for the carrier (Azoulai, 2000). Other IT examples, such as the use of Kiosks technology for ticketing and check-ins, not only lower costs, but also give today's travelers some control over a process in which they sense a lack of control.

Homogeneous Fleet Type

A homogeneous fleet type will allow common flight crew training, crew certification, maintenance procedures, and supporting inventory. All carriers should adopt an aircraft purchase or replacement process that will limit their fleets to the minimum number of aircraft types necessary based on route distances and payload considerations (Airline of the year, 2003; Franke, 2004). For example, today's operation of each aircraft in each aircraft type typically requires five crews, and when these crew members change their route bid lines to fly different, higher paying type aircraft, there is a fleet-wide domino effect in training requirements as crewmembers bid to fill vacant positions (Dismal Demand, 2003). Today, the five largest U.S. carriers operate an average of eleven different aircraft types with eight different flight crew pay classifications ("Pilots Defending the Profession," 2004). On the other hand, Southwest Airlines and JetBlue Airways, current low-cost leaders, have successfully operated single fleet types.

Use of the Regional Jet (RJ)

The RJ is designed to lower cost while offering passengers more convenient direct service over short to intermediate distances (Costa et al., 2003; Kluyver & Pearce, 2003). For instance, the Embraer RJ, a type of regional jet, can be configured with 70-118 seats, 85% common parts, and 100% common cockpit crew configurations (Shifrin, 2004). Southwest Airlines is now considering the RJ option, and JetBlue Airways is committed to buying the Embraer RJ for use over routes having low demand (Trottman, 2003). However, for many carriers their pilot labor contracts may contain a scope provision which sets pay based on aircraft seating capacity and may limit the use of the RJ designs (Feldman, 2001; Ott, 2002). Addressing the scope clause limitation on aircraft selection should be a priority in labor contract negotiations.

Work Rules and Pay

Low-cost does not necessarily mean low pay. During the 1990-1995 business cycle, Dooley (1994) addressed the issue of operating costs and noted that the average salary of employees at Southwest Airlines was about the same as the average employee salary at the largest carriers. In one job classification example, he found that in 1992 favorable work rules allowed Southwest pilots to fly an average of 63.7 hours/month compared to an average of 48.3 hours/month for the largest carriers. Measuring in terms of operating costs, he found that the additional duty hours spent operating a single-plane type gave Southwest a 38% productivity advantage, which resulted in a $1200 labor cost savings per average flight when compared to the largest carriers. A decade later, McCartney (2002) addressed this same issue and found that flight crews at Southwest had more favorable work rules that allow them to fly more duty hours/year compared to the other large

carriers, yet flight captains with ten-years experience earned about the same, or $150,000 per year, at Southwest and the other large carriers.

Hub Operations

Traditionally, major carriers with hub operations have banked flights so that many flights would arrive during a short time interval. This banking could be repeated several times each day and provide passengers with the minimum time between connecting flights. In the new airline environment, an operating model involving "rolling hubs" is suggested in order to avoid arrival or departure congestion and to spread flights out more evenly throughout the day (Arndt & Zellner, 2003). The negative effect of this change is an average increase in passenger connection time between flights, but the positive effect is a reduction in block times. Block time begins when the aircraft leaves the parking blocks at the departure gate and ends when it stops at the parking blocks at the destination gate. A reduction in block time saves aircraft and crew time that can be used for flying rather than waiting on the ground. In one example, Ott (2003) reported on the benefits recorded by American Airlines with its introduction of rolling hub scheduling. In his report, he noted that American estimated savings of $100 million per year in facilities, personnel, and fuel costs at the expense of 10.7 minutes average increase in passenger connection time. The smoother traffic flow resulting from rolling hub scheduling improved efficiency at American and allowed it, for example, to complete its Chicago flight schedule with five fewer aircraft, four fewer gates hosting 8-9 departures/day, and a 5% manpower reduction.

Outsource Maintenance

Donoghue and Geoff (2003) concluded that a fundamental change is needed in the way that network carriers look at the industry and that they need to outsource activities such as maintenance. In-house maintenance activities have been a standard part of the business models of major carriers for decades with large airlines devoting 12% of their operating expenses to maintenance (Bacheldor, 2003). Arndt and Zellner (2003) noted that Southwest airlines and other successful low-cost carriers are outsourcing their engine and airframe maintenance. They suggested that those carriers with in-house maintenance units should consider selling the facilities to their employees, contingent on an initial maintenance contract. This action would be difficult to initiate and implement in any environment other than the current high-loss, high-risk climate. Dedicated aircraft maintenance firms and the maintenance divisions of the original equipment manufacturers (OEMs) offer the higher volume and spare parts inventory pooling needed to lower costs. McDonald (2002) stressed the importance of controlling costs for aircraft parts and noted that the tighter management of aircraft spare parts represents a potential for savings that is greater than any existing opportunity for improved revenue.

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PROGRESSIVE MANAGEMENT PRACTICES AS PREDICTORS OF ORGANIZATIONAL FUTURE PERFORMANCE: EMPIRICAL EVIDENCE

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ABSTRACT

This study explores progressive management practices (selective hiring, extensive training, employment security, self-management teams and decentralization, comparatively high compensation contingent on organizational performance, reduction of status differences, and sharing information) that treat employees as the most valuable asset. The study also investigates the impact of these management practices on the future performance of organizations (return on assets, return on sales, sales growth, and earning per share). The results of this study indicate that selective hiring, extensive training, comparatively high compensation contingent on organizational performance, and sharing information have significant and positive effects on the future performance of organizations.

INTRODUCTION

It is now commonly accepted that human resources create an important source of competitive advantage for firms (Pfeffer, 1994). Recent theoretical work on the resource-based view of the firm supports this notion (Barney, 1991). The importance of human resources has led to increased interest in identifying and adopting progressive management practices that improve organizational performance.

Barney (1991) argued that progressive management practices lead to sustainable competitive advantage when they are valuable, rare, inimitable and not substitutable. Ulrich and Lake (1990) asserted that technology, natural resources, and economics of scale can create value. However, resource-based theory argued that these sources of value are increasingly available to almost anyone anywhere and they are easy to copy, especially when compared to complex social systems like human resource systems. As a result, several authors (e.g., Pfeffer, 1994; Snell et al., 1996; Wright & McMahan, 1992) have considered that human resources a better source of core competencies that

lead to sustainable competitive advantage. This interpretation is consistent with Hamel and Prahalad,(1994) who suggested that core competencies are normally people-embodied skills.

According to Pfeffer (1998), actual management practices, in many instances, are moving in a direction exactly opposite to what this growing body of evidence prescribes. Moreover, this disjuncture between knowledge and management practices is occurring at the same time that organizations, confronted with a very competitive environment, are frantically looking for magic principle that will provide sustained success, at least over some reasonable period of time.

Pfeffer and Veiga (1999) developed seven dimensions of progressive management to characterize most, if not all, of the systems improving organizational performance through human resources. Hagen, Udeh and Wilkie (2002) have extended Pfeffer and Veiga's (1999) study to provide a sound business case and to attest that the way an organization manages its human resources is a real and enduring source of competitive advantage. These authors also examined the perception of CEOs toward management practices and the CEOs' ranking order to these practices. The findings of these authors revealed that the seven management practices developed by Pfeffer and Veiga (1999) are the way that companies should manage their people as their most important asset.

This study extends Hagen, Udeh and Wilkie's (2002) work and examines the impact of progressive management practices (selective hiring, extensive training, employment security, self-management teams and decentralization, comparatively high compensation contingent on organizational performance, reduction of status differences, and sharing information) on the future performance of organizations (return on assets, return on sales, sales growth, and earning per share).

MANAGEMENT PRACTICES AND ORGANIZATIONS PERFORMANCE

Numerous researchers from various disciplines (e.g., Cascio, 1991; Arthur, 1994; Delery & Doty, 1996; Hagen, Udeh, & Hassan, 2001) proposed various conceptual frameworks to explain the link between progressive management practices and organizational outcomes. For example, Pfeffer (1994) claimed that management practices including employee participation and empowerment job design (team-based production system, extensive employee training, performance-contingent incentive compensation, etc.) are widely believed to improve performances of organizations. Similarly, Huselid (1995) concluded that certain management practices affect turnover, productivity, and financial performance of organizations.

In the same vein, Pfeffer (1998) claimed that employee participation and empowerment job design (team-based production system, extensive employee training, performance-contingent incentive compensation, and others) are widely believed to improve the performance of organizations. Huselid (1995) also concluded that some management practices affect turnover, productivity, and financial performance of organizations. Delery and Doty (1996) found that

progressive management practices have the most significant effects on firm's outcomes such as productivity, turnover, and financial performance.

Pfeffer and Veiga (1999) asserted that these tremendous gains come about because high performance management practices provide a number of important sources for enhanced organizational performance. People work harder when organizations increase their involvement and commitment that come from having more control and say in their work. People also work smarter if they are encouraged to build skills and competences. Finally, people work more responsibly because more responsibility is placed in the hands of employees further down the organizational hierarchy. These practices are grounded in sound social science principles that have been shown to be effective by a great deal of evidence.

However, chief executive officers (CEOs) often look for evidence; they do not want to hear anecdotes that are specifically selected to make some point. There is a substantial and rapidly expanding body of evidence that confirms a strong connection between how firms manage their people and the economic results achieved. This evidence is drawn from studies of five-year survival rates of initial public offerings; studies of profitability and stock price in large samples of companies from multiple industries; and detailed research on the automobile, apparel, semiconductor, steel manufacturing, oil refining, and service industries. It shows that substantial gains can be obtained by implementing certain management practices (Pfeffer, 1998).

According to an award-winning study of high performance work practices of 968 firms representing all major industries, a one standard deviation increase in the use of such practices is associated with a 7.05 percent decrease in turnover and, on a per employee basis, $27,044 more in sales and $18,641 and $3,814 more in market value and profits, respectively (Huselid, 1995). That is an $18,000 increase in stock market value per employee. A subsequent study conducted on 702 firms in 1996 found even larger economic benefits: A one standard deviation improvement in the human resources system was associated with an increase in shareholder wealth of $41,000 per employee, about a 14 percent market value premium (Huselid & Becker, 1997).

These results are not unique to firms operating in the United States. Similar results were obtained in a study of more than one hundred German companies operating in ten industrial sectors. The study found a strong link between investing in employees and stock market performance. Companies that place workers at the core of their strategies produce higher long-term returns to shareholders than their industry peers (Biomes, Wetzker & Xhonneux, 1997).

One of the clearest demonstrations of the causal effect of progressive management practices on performance comes from a study of the five-year survival rate of 136 non-financial companies that initiated their public offering in the U.S. stock market in 1988. By 1993, only 60 percent of these companies were still in existence. The empirical analysis demonstrated that with other factors such as size, industry, and even profits statistically controlled, both the value the firm placed on human resources-such as whether the company cited employees as a source of competitive advantage-and how the organization rewarded people-such as stock options for all employees and

profit sharing-were significantly related to the probability of survival. The difference in survival probability for firms one standard deviation above and one standard deviation below the mean (in the upper 16 percent and the lower 16 percent of all firms in the sample) on valuing human resource was almost 20 percent. The difference in survival, depending on where the firm scored on rewards, was even more dramatic, with a difference in five-year survival probability of 42 percent between firms in the upper and lower tails of the distribution (Welbourne & Andrews, 1996).

PROGRESSIVE MANAGEMENT PRACTICES

Hagen, Hassan and Maghrabi (2002) concluded that different management practices have different effect on organizational outcomes. Based on related literature, personal observation, and experience, Pfeffer and Veiga (1999) developed what he called progressive management practices that seem to characterize most, if not all, of the systems that improve organizational performance through human resources. Each one of these practices is briefly summarized below.

Employment Security

Employment security has been emphasized as an important dimension on the effects of high performance management systems by most researchers (Dessler, 1999). In his cross-national review, Locke (1995) proposes that innovations in work practices or other forms of worker-management cooperation or productivity improvement are not likely to be sustained over time when workers fear that by increasing productivity they will work themselves out of their jobs. According to Pfeiffer and Vega (1999), providing employment security in today's competitive world seems impossible and very much at odds with what many firms are doing.

However, employment security is fundamental to the implementation of most other high performance management practices. For example, when General Motors wanted to implement new work arrangements in its innovative Saturn plant in the 1990s, it guaranteed its people job security, except in the most extreme circumstances. When New United Motors Manufacturing firm was formed to operate the Fremont automobile assembly plant, it also offered its people job security (Kelleher, 1997).

Assurance of job security has various benefits. One advantage to firms is the workers' free contribution of knowledge and their efforts to enhance productivity. A second advantage is the decreased likelihood that employees will be laid off during downturns. In the absence of a commitment to retain the work force (either through pledges about employment security or through employment obligations contractually negotiated with a union) firms may lay off employees too quickly and too readily at the first sign of financial difficulty. This hasty action constitutes a cost for firms that have done a good job of selecting, training, and developing their workforce because

layoffs put important strategic assets on the street for the competition to employ (Pfeffer & Veiga, 1999).

Selective Hiring

Companies that are serious about obtaining profits through people will expend the effort required to ensure that they recruit the right people in the first place. Selective hiring requires several things. First, organizations need to have a large applicant pool from which to select (Pfeffer & Veiga, 1999). Southwest Airline uses a large pool of applicants. Second, organizations must specify the most critical skills and attributes needed in applicants. Southwest Airline requires certain skills for flight attendant positions (O'Reilly, 1996). Third, skills and abilities sought by organizations need to be carefully considered and consistent with the particular job requirements and the organization's approach to its market. Enterprise Rent-A-Car seeks certain skills and attributes for its employees (O'Reilly, 1996). Fourth, organizations should screen primarily on important attributes that are difficult to change through training and should emphasize qualities that actually differentiate among those in the applicant pool. Interviewers at PeopleSoft (a producer of human resource management software) apply these rules to differentiate themselves from other interviewers (O'Reilly, Chatman & Caldwell, 1991; Chatman, 1991).

Self-Managed Teams and Decentralization as Basic Elements of Organizational Design

Various studies attest to the effectiveness of teams as a principle of organizational design (Farren, 1999; Gregory, 1999). Team-based organizations are largely successful in having all of the people in the firm feel accountable and responsible for the operation and success of the enterprise, not just a few people in senior management positions. This increased sense of responsibility stimulates more initiative and effort on the part of everyone involved. In addition, teams permit removal of layers of hierarchy and absorption of administrative tasks previously performed by specialists, avoiding the enormous costs of having people whose sole job is to watch people who watch other people do the work.

For example, the implementation of teams in Honeywell's defense avionics plant led to credits improvement on-time delivery from 59 percent in the late 1980s to 99 percent in the first quarter of 1996 (The Wall Street Journal, 1996). Teams at Saturn and at Chrysler Corporation's Jefferson North plant provide a framework in which workers more readily help one another and more freely share their production knowledge--the innumerable 'tricks of the trade' that are vital in any manufacturing process (Shaiken, Lopez & Mankita, 1997). The key to this success lies in its use of self-managed teams and the consequent savings in management overhead (Van Beusekom, 1996). Comparatively High Compensation Contingent on Organizational Performance: It is often argued that high compensation is a consequence of organizational success rather than its progenitor, and

that high compensation is possible only in certain industries that either face less competition or have particularly highly educated employees. In fact, neither of these statements is correct (Lewis, Goodman & Fandt, 2001).

In 1972, Pathmark Company had about 90 days to live, and was in a desperate financial situation. The new manager, who assumed leadership in 1972, discovered that 120 store managers in the chain were paid less than the butchers, who were unionized. He decided that the store managers were vital to the chain's success and its ability to accomplish a turnaround. He gave the store managers a substantial raise of about 40 to 50 percent. Subsequent success of the chain was attributed to improving performance instead of managers complaining about their pay (Pfeffer & Veiga, 1999). The idea that only certain jobs or industries can or should pay high wages is belied by the example of many firms. Home Depot has been successful and profitable, and its stock price has shown exceptional returns. Even though the chain emphasizes everyday low pricing as an important part of its business strategy and operates in a highly competitive environment, it pays its staff comparatively well for the retail industry, hires more experienced people with building industry experience, and expects its sales associates to provide a higher level of individual customer service (Pfeffer & Veiga, 1999).

Contingent compensation also figures prominently in most high performance work systems. Such compensation can take a number of different forms, including gain sharing, profit sharing, stock ownership, pay for skill, or various forms of individual or team incentives. Wal-Mart, AES Corporation, Southwest Airlines, Whole Foods Markets, Microsoft, and many other successful organizations encourage share ownership.

Extensive Training Programs and Development

Training is often seen as a frill in many U.S. organizations, or something to be reduced to make profit in times of economic stringency. Studies of firms in the United States consistently provide evidence of inadequate levels of training (Grossman & Mangus, 1989; Lawler, Mohrman & Ledford, 1992). Even when there is training, it focuses on special skills rather than general list of competence and organizational culture. Although knowledge and skill are critical for organizational success, few organizations act on this insight.

Men's Warehouse (an off-price specialty retailer of men's tailored business attire and accessories) discovered that training could be a source of competitive advantage if used wisely. In Men's Warehouse's 2001 Annual Report it stated that it had achieved compounded annual growth rates in revenues and net earnings of 32 and 41 percent, respectively, and that the value of its stock had increased by approximately 400 percent. The company attributes its success to how it treats its people and particularly to the emphasis it has placed on training, an approach that separates it from many of its competitors. The company built a 35,000 square foot training center at its headquarters in Fremont, California. During the winter, experienced store personnel come back to headquarters

in groups of about 30 for a three or four-day retraining program (Men's Warehouse Annual Report, 2001).

Reduction of Status Differences

The fundamental premise of high performance management systems is that organizations perform at a higher level when they are able to tap the ideas, skill, and effort of all of their people. In order to help make all organization members feel important and committed, most high commitment management systems attempt to reduce the status differences that separate individuals and groups and cause some to feel less valued. This notion can be accomplished through the use of language and labels, physical space, dress, and substantively in the reduction of the organization's degree of wage inequality, particularly across levels (Dessler, 1999).

At the New United Motor Manufacturing firm, everyone wears the same colored smock; executive dining rooms and reserved parking don't exist. At Kingston Technology, the two cofounders sit in open cubicles and do not have private secretaries. By limiting the difference in compensation between senior management and other employees, status differences are reduced (Pfeffer & Veiga, 1999). When Southwest Airlines negotiated a five-year wage freeze with its pilots in exchange for stock options and occasional profitability bonuses, the CEO of Southwest, Herb Kelleher, agreed to freeze his annual base salary at $395,000 for four years reduced from $500,000 per year, including base and bonus. Sam Walton, the founder and chairman of Wal-Mart, was one of the most underpaid CEOs in the United States (The Economist, 1995).

Sharing Information

Information sharing is a basic and essential component of high performance work systems. The sharing of information on such things as financial performance, strategy, and operational measures conveys to the organization's people that they are trusted. For example, Whole Foods Markets shares detailed financial and performance information with every employee, including individual salary information. Every Whole Foods store has a book that lists the previous year's salary and bonus for all 6,500 employees (Fisherman, 1996).

Even motivated and trained people cannot enhance organizational performance if they don't have information on important dimensions of performance and training on how to use and interpret that information (Dessler, 1999). The famous case of Springfield ReManufacturing Corporation (SRC) is a good example that illustrates this assertion. When General Motors canceled an order in 1986 that represented about 40 percent of SRC's business for the coming year, the firm averted layoffs by providing its people with information on what had happened and letting them figure out

how to grow the company and achieve the productivity improvements that would avoid layoffs. SRC has since enjoyed tremendous financial success (Pfeffer & Veiga, 1999).

ORGANIZATIONAL PERFORMANCE

Weiner and Mahoney (1981) stated that there are various measures that can be utilized to measure the performance of organizations. One of the principal measures is the financial performance. Prior work on the measurement of organizational financial performance is extensive. Some researchers used profitability variables to measure financial performance of organizations (e.g., Gerhart & Milovitch, 1992; Huselid, 1995; Delery & Doty, 1996; Peffer, 1998; Hagen & Haj, 2003). Other studies used sales per employee and market value (Huselid, 1995), shareholder wealth (Huselid and Becker, 1997), and stock market performance (Blimes, Wetzker & Xhonneux, 1997; Welbourne & Andrews, 1996).

Finally, Zahra, Neubaum and Huse (2000) used return on assets (ROA), return on sales (ROS), sales growth (SG), and earnings per share (EPS). Since the selection of variables used in measuring financial performance of an organization is left to researchers, we selected ROA, ROS, SG, and EPS to test the impact of progressive management practices on organizational performance.

RESEARCH HYPOTHESES

Literature review suggests that certain management practices affect firm's performance. Therefore, management practices should be related to at least some relevant outcomes of firms. Arthur (1994) claimed that because some management practices increase employee's discretionary effort, such practices would affect firm's outcomes. Bartel (1994) asserted that because returns from investments in human resources exceed their real costs, lower turnover and greater productivity should in turn enhance the firm's financial performance. Based on these arguments, the following hypotheses have been formulated:

H1:	There is a positive and significant relationship between return on assets (ROA) and progressive management practices (selective hiring, extensive training, employment security, self-management teams and decentralization, comparatively high compensation contingent on organizational performance, reduction of status differences, and sharing information).
H2:	There is a positive and significant relationship between return on sales (ROS) and management practices (selective hiring, extensive training, employment security, self-management teams and decentralization, comparatively high compensation contingent on organizational performance, reduction of status differences, and sharing information).

H3:	There is a positive and significant relationship between Sales growth (SG) and management practices (selective hiring, extensive training, employment security, self-management teams and decentralization, comparatively high compensation contingent on organizational performance, reduction of status differences, and sharing information).
H4:	There is a positive and significant relationship between earnings per share (EPS) and management practices (selective hiring, extensive training, employment security, self-management teams and decentralization, comparatively high compensation contingent on organizational performance, reduction of status differences, and sharing information).

RESEARCH METHODS

Research methods used in this study included survey questionnaire, sample and data collection, measurements, and statistical techniques.

Survey Questionnaire

The survey questionnaire was developed by the researchers of this study and included seven management practices. The items and statements utilized in this survey were adapted from Pfeffer and Veiga's (1999) study. The first section of this survey included 29 statements measuring progressive management practices that treat human resources as a valuable asset. Statements measuring progressive management practices were categorized under seven management practices as follows: employee security (4 items), selective hiring (5 items), self management teams and decentralization (5 items), comparatively high compensation contingent on organizational performance (4 items), extensive training programs and development (6 items), reduction of status differences (2 items), and sharing information (3 items). Each statement has a five-point Likert response format ranging from strongly disagree (1) to strongly agree (5). Cronbach alpha (.72-.88) was obtained for the overall scale scores measuring the management practices.

The second section concerning some control variables included 22 statements grouped under innovation process innovation (5 items), product innovation (4 items), and organization's innovation (4 items), and venturing domestic venturing (5 items), and international venturing (4 items). Cronbach alpha (.72-.79) was obtained for the overall scale scores measuring innovation and venturing.

This survey elicited opinions from the participating CEOs who actually practiced some or all the suggested seven management practices in their organizational settings. Respondents were asked to assign the degree or the extent of their agreement or disagreement with each of the 29 items concerning management practices, and each of the 22 items concerning innovation, and venturing of organizations.

The third section included demographic information (age, education, experience of responding CEOs) and organizational variables (age and size of participating organizations).

Sample and Data Collection

Data collection included primary data and secondary data. Primary data were collected from a research sample. Since most research has focused on larger corporations our study utilized a sample of medium-size public companies (i.e., companies in the $25 to $500 million asset range) (Roth, 1992). Moreover, medium-sized firms have recently internationalized their operations (Acs & Preston, 1997).

For a firm to be included in this study, it must meet three criteria. First, all firms had to have been in existence for at least eight years, which reduced the potential bias associated with organizational newness. Second, firms had to be in the $25 to $500 million-asset range to qualify as being medium in size. Finally, all firms had to be publicly held so that data to validate the survey-based measures could be obtained. Using these criteria, 427 firms located throughout the United States, falling in ten industry groups, were identified from Combat Disclosure. Firms were selected from different industries to capture potential variations in technological opportunities, innovation, and venturing. CEOs of the chosen firms were mailed a cover letter requesting their participation, the survey questionnaire, a stamped return envelope, and a brief summary of the seven management practices used in this study. Of the 427 mailed questionnaires, 112 (26.2%) were returned to the authors. Of the 112 complete and usable questionnaires, there were 19 and 93 female-male CEOs, respectively. Firms of responding CEOs were identified by certain codes previously designed for collecting financial variables. Secondary data were collected from various sources related to the four financial variables.

Measurements of Variables

Measurements included progressive management practices (independent variables), the firm's performance (the dependent variables), and control variables. The following procedure was implemented:

Progressive Management Practices

The adapted survey questionnaire was used to measure the seven management practices identified in this study. Each management practice was measured by the mean scores assigned by respondents to the items associated with each practice.

Firm's Performance

This study used four performance measures to examine the impact of progressive management on the future performance of firms. Return on assets (ROA) was measured as a company's net earnings divided by its total assets. Return on sales (ROS) was measured as a company's net earnings divided by its total sales. Sales growth (SG) was measured by the year-to-year average change in a company's sales. This meant subtracting a company's sales in a given year from its sales in the previous year and then dividing the difference by the previous year's sales. Earning per share (EPS) was measured by dividing net earnings by the average common shares outstanding. EPS shows returns to shareholders for each share they owned. Financial data for the responding firms (identified by certain codes) were collected from Compact Disclosure, Moody's Industrial Manual, the Standard & Poor's Guide and annual reports. The questionnaire was administered and completed during the first quarter of 2002. Subsequently, financial data were collected in the three-year period (1999-2001).

Control Variables

The control variables used in this study included the size and age of the firm, technological opportunities, innovation, and venturing in organizations. The firm's size was measured as the total dollar value of assets. The firm's age was measured by the number of years from the founding date of each firm. Technological opportunities were measured by the three-year average of industry R & D spending as percentage of sales obtained from COMPUSTAT. Innovation and venturing were measured by the responses of CEOs to the 13 and 9 statements, respectively, identified in the second part of the survey questionnaire.

Statistical Analysis

Statistical analysis in this study utilized the Statistical Package for Social Science (SPSS-X) to generate means, standard deviations, and intercorrelations among the study variables, and to conduct factor analysis and multiple regressions.

FINDINGS OF THIS STUDY

One of our goals was to investigate the factor structure of the scales by incorporating all scales of the seven management practices into a separate confirmatory factor analysis (CFA). The CFA conducted on these data collected from the responding CEOs revealed that the measures were distinguishable from one another. Another CFA incorporated all scales of the four innovation dimensions and the two venturing dimensions. The CFA conducted on these data also revealed that

the measures were distinguishable from one another. Due to the limited space, these CFAs are not reported in this study. However, all CFAs can be obtained from authors upon request from their published addresses and e-mails.

The matrix correlation presented in Table 1 shows moderate correlations among included items. These correlations indicate that the seven management practices and the four performance measures are not completely independent. These correlations were expected because the items measuring progressive management practices and the firm's performance measures are interrelated. However, such moderate correlations should not be considered a serious problem in previous research (e.g., Hagen, Udeh, and Hassan, 2001).

Table 1 shows correlation between four management practices (employment security, selective hiring, comparatively high compensation contingent on organization's performance, and extensive training and development programs) and the four firm's performance measures. Employment security was correlated with ROA ($r = .22$; $P < .01$), ROS ($r = .15$; $P < .05$), and SG ($r = .21$; $P < .01$). Selective hiring was correlated with ROA ($r = .18$; $P < .05$), ROS ($r = .19$; $P < .05$), SG ($r = .18$; $P < .05$), and EPS($r = .13$; $P < .05$). Comparatively high compensation contingent on organization's performance was correlated with ROA ($r = .19$; $P < .05$), ROS ($r = .16$; $P < .05$), and SG ($r = .12$; $P < .05$).). Extensive training and development programs were correlated with ROA ($r = .22$; $P < .01$), ROS ($r = .24$; $P < .01$), SG ($r = .21$; $P < .01$) and EPS ($r = .19$; $P = < .05$).

This notion refers to a potential relationship between the progressive management practices and a firm's future performance. However, our results indicate that none of the above four progressive management practices are correlated with all dependent variables. This notion suggests that if an independent variable is correlated with one or two of the dependent variables, it is not necessarily that it will be correlated with all dependent variables.

Multiple regressions were also used to examine the four hypotheses, which suggested a positive relationship between the seven progressive management practices and a company's future performance. This analysis required four regressions, one for each performance criterion. For each dependent variable (ROA, ROS, SG, and EPS), the analysis was run by entering control variables (i.e., company's age, size, technological opportunities, product innovation, process innovation, organizational innovation, domestic venturing, and international venturing) and the seven measures of progressive management practices (independent variables). The outcomes of the four multiple regression analyses are presented in Tables 2.

As Table 2 shows, the four regression equations were statistically significant, with adjusted R^2 ranging from 0.27 to 0.32. There is positive and significant relationship between "employee security" and three company's performance measures (ROA, $P < .05$; ROS, $P < .01$; SG $P< .05$). A similar relationship can be seen between "selective hiring" and the same measures of firm's performance ($P < .01, .05, .05$ for ROA, ROS & SG respectively). A positive and significant relationship does also exist between comparatively high compensation contingent on firm's performance and ROA ($P < .05$), ROS ($P < .01$), and SG ($p < .01$). However, employment security,

selective hiring, and comparatively high compensation contingent on firm's performance are not related to EPS. While a positive and significant relationship appears between extensive training programs and ROA (P < .01), ROS (P< .05), SG (P < .05), this management practice has a marginal-positive relationship with SG (P <. 10). Finally, there is a marginal-positive relationship between sharing information and both ROA (P < .10) and ROS (P < .10), with the exception of SG and EPS.

Table 1: Correlation Matrix for the Responses of CEOs to Progressive Management Practices and profitability variables

Management Practices	1	2	3	4	5	6	7	8	9	10	11
1. Employment security	1.0										
2. Selective hiring	.14*	1.0									
3. Self-management teams/ decentralization	.04	.16*	1.0								
4. Comparatively high compensation contingent on firm's performance	.05	.16*	.07**	1.0							
5. Extensive training programs/ development	.14*	.21**	.10*	.21*	1.0						
6. Reduction of status differences	.09	.07	.11	.06	.06	1.0					
7. Sharing information	.16*	.09	.14*	.08	.07	.10	1.0				
8. ROA	.22**	.18*	.11	.19*	.22**	.09	.08	1.00			
9. ROS	.15*	.19*	-.07	.16*	.24**	.08	-.07	.24**	1.0		
10 SG	.21**	.18*	-.09	.12*	.21**	-.06	.07	.23**	.17**	1.00	
11 EPS	.11	.13*	-.09	.07	.19*	-.06	.07	.18*	.19**	.16*	1.00

* P< .05
** P< .01

With respect to control variables, product innovation is positively and significantly related to ROA, ROS and EPS (p< .05), with the exception of EPS. Process innovation is also positively and significantly related to ROA, ROS and EPS (p< .05), but not with SG. Firm's innovation is positively and significantly related to EPS (P < .05) and marginally significant with ROA (P < .10).

Domestic venturing is positively related to SG (p< .01) and negatively related to both ROS (P < .05) and EPS (P< .01). The relationship between domestic venturing and ROA is negative but insignificant. Finally, international venturing is positively associated with SG (P < .01) and negatively with both ROA and ROS (P < .05).

Technological opportunities are significantly and positively related to ROA, ROS, and SG (P < .05), but marginally significant to EPS (P <. 10). Firm's age is significantly and positively related to ROS (P < .05) and marginally significant to ROA (P < .10). Firm's size is significantly and positively related to ROA (P < .05) and marginally significant to EPS (P <. 10).

Table 2: Regression Analysis of Variance for the Seven Management Practices and the Future Performance of Organizations

Independent Variables	Dependent Variables: Profitability Variables			
	ROA Coefficient	ROS Coefficient	SG Coefficient	EPS Coefficient
Employment security	.2475*	.2618**	.1846*	.0457
Selective hiring	.3511**	.2422*	.0724*	.1018
Comparatively high compensation contingent n organization's performance	.1731*	.2341**	.2825**	.0783
Training and development programs	.3142**	.1859*	.2273*	.1102+
Reduction of status differences	.0662	.0274	.0757	.0757
Sharing information	.1175+	.0874	.0363	.0757
Product innovation	.3682**	.3841**	.4225**	.1025
Process Innovation	.2162*	.2416*	.1122	.2711*
Organizational innovation	.1682*	.1341	.1128	.2244*
Domestic venturing	-.1063	-.2186*	.2738**	-.2416**
International venturing	2231*	-.3147*	.3264**	.1268
Technological opportunities	.1746*	.2251*	.1410+	.0757
Age of organizations	.1419+	.2341*	.0827	.0528
Size of organizations (log employees)	.1397*	.1661+	.0284	.0462
R^2	.38	.33	.31	.37
Adjusted R^2	.32	.28	.27	.29
F-value	2.79	2.87	2.64	3.25

* P= < .05
** P= < .01
\+ P= < .10

DISCUSSION

Recently, researchers have shown a strong interest in understanding the factors that enhance or impede a company's future performance. The results of this study provided support for the perspective of progressive management practices. Four of seven individual management practices (selective hiring, extensive training, employment security, and comparatively high compensation contingent on firm's performance) have strong and positive relationships with the four performance measures (ROA, ROS, SG, EPS).

The relationship between comparatively high compensation contingent on comparatively high firm's performance measures supports the explanation of agency theory (Eisenhardt, 1988) and behavioral theory (Katz & Kahn, 1978). Agency theory suggests that basing employee rewards on firm's performance is aligned with the owner's interests. In terms of the behavioral perspective, rewards may be seen as a substantial inducement for desired performance, especially for profit-making business organizations. By tying employee compensation to firm's performance, the firm tends to reward employee behavior that is consistent with its overall performance goal (Delery & Doty, 1996).

The significant relationship between selective hiring and the firm's performance variables is consistent with the agency theory (Eisenhardt, 1988), control theory (Snell, 1991), and the transaction cost perspective (Jones & Wright, 1992). Each theoretical perspective claims that selective hiring will enhance performance when measures of the firm's performance are either readily available or are less costly to obtain than other performance measures (Delery & Doty, 1996).

The effects of employment security on firm's performance are more difficult to explain in terms of the theories mentioned above. Granting employment security without monitoring employee performance does not guarantee employees engaging in appropriate behavior. However, employment security may marginally align the interest of employees and owners. If employees fail to perform in a manner that produces continued profits for a profit-making firm, the firm may not exist, thereby ending the guarantee of employment security. Moreover, employment security sends a signal that a firm is committed to its employees. If employees reciprocate this commitment, the firm should have a workforce with a high level of commitment and motivation (Delery & Doty, 1996).

The effects of training programs are consistent with the perspectives of the resource-based theory (Barney, 1991), resource-dependency theory (Pfeffer & Cohen, 1984), and human capital theory (Becker, 1964). Resource-based theory assumes that each organization is a collection of unique resources that provide the organizational returns. This theory also argues that a firm is a collection of evolving capabilities that is managed in pursuit of above-average returns. According to the resource-dependency theory, differences in firm performances across time are driven primarily by their unique resources and capabilities rather than by the structure or characteristics of industry.

Human capital theory views employees as human capital. Human capital refers to the knowledge and skills of the entire workforce of a firm. Much of the development of U.S. industry can be attributed to the effectiveness of its human capital. One-third of the U.S. gross national product is attributed to increases in the educational level of the U.S. workforce (Hitt, Ireland & Hoskisson, 1998).

Technological opportunities reflect the extent to which a company believes its primary industry offers major opportunities for growth and innovations. When these opportunities are abundant, the company is expected to vigorously support innovations and hence, technological opportunities. Conversely, when technological opportunities are limited, the company is expected to venture domestically or internationally to create new revenue streams.

Medium-size firms are more likely to innovate than larger firms. The literature suggests that, on average, larger companies may have the resources and skills necessary for venturing in domestic or international. Younger firms are expected to be more innovative than older firms because new firms are often created to exploit specific technological advances by introducing radically new products. Older companies are more likely to engage in venturing to renew their operations

IMPLICATIONS AND CONCLUSIONS

It appears that progressive management practices are viable and lead to different assumptions about the relationships between these respective management practices and the future performance of firms. These results reflect explicit relationships between the characteristics of the employment systems of a firm and its performance (measured by certain financial variables). Firms adopt progressive management practices can generate and achieve greater returns. (Pfeffer, 1994) pointed out that the implementation of these practices is not always an easy task. Therefore, he argued that it is unlikely that firms can quickly or easily imitate certain management practices of the best organizations. Consequently, organizations that adopt a greater number of these practices are likely to gain at least a short-term competitive advantage and enjoy superior performance.

RECOMMENDATIONS FOR FUTURE RESEARCH

We recommend longitudinal studies to address the causal relationship between progressive management practices and a firm's performance. There is a need for future studies that include additional management practices related to a firm's performance to provide more accurate estimates of the full effect of progressive management practices on a firm's performance.

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TOTAL QUALITY MANAGEMENT IMPLEMENTATION: THE "CORE" STRATEGY

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ABSTRACT

This research presents an empirical investigation of total quality management (TQM) implementation in small- to medium-sized manufacturing firms. The study introduces a new TQM implementation strategy: the "Core" approach and tests the efficacy of a five-element quality management model. Factor analysis, cluster analysis, and ANOVA are used to test relationships among implementation, resulting practices, and performance. Results suggest TQM implementation transcends industry type and is most successful when viewed as a holistic process rather than either selective or contingent.

INTRODUCTION

Most American and European businesses have deployed some type of quality initiative in their operations (Silvestro, 2001). Yet, many firms have seen little to no benefit from their quality management efforts. Research has attributed many of these disappointments to improper quality management program implementation (Belohav, 1993; Cole, Bacdayan, & White, 1993; Smith, Tranfield, Foster, & Whittle, 1994; Hackman & Wageman, 1995; Douglas & Judge, 2001; Yusof & Aspinwall, 2002). Indeed, recent work suggests that the high failure rate of quality management initiatives results from a mismatch between these processes and critical problems in their respective environments; in short, that quality management should be seen and properly executed as a contingent process (Melcher, Khouja, & Booth, 2002; Das, Handfield, Clalantone, & Ghosh, 2000; Claycomb, Droge, & Germain, 2002; Wang, 2004).

While there is a growing body of literature studying the linkage between quality management practice and performance, most research is not empirically-based and centers on large manufacturing companies (Rahman, 2001). Furthermore, Ingle (2000) noted that little discussion has focused on total quality management (TQM) implementation methodologies and that further work in the area is called for. It is these gaps that this research will address by investigating the relationships among implementation practices and performance in small-to-medium manufacturing businesses. This research will show that, for these firms, quality management implementation transcends industry

type and is most successful when viewed as a holistic process, as opposed to either a step-wise or contingent process.

The next section of the paper features a review of the literature relevant to the current study. We follow with the operational definition of TQM upon which our research is based. Research methodology is then presented, followed by an analysis of the demographics of firms included in the study. Empirical results are then shown. A final discussion of results and implications is presented in the conclusion section.

EXECUTION, CONTINGENCY THEORY, AND IMPLEMENTATION

Powell (1995) hypothesized that TQM firms outperform those without quality management programs in a survey of CEOs and quality executives in the Northeastern U.S. Powell utilized financial performance as a dependent variable and evaluated it on the basis of profits, sales growth, and overall financial performance, reported subjectively by the senior manager responding to the survey. He found that certain behavioral aspects of TQM result in improved performance, and concluded that firms with a formal quality management program outperform those without a TQM program.

Ahire (1996) studied the impact of TQM programs centering on the following question: Is TQM a long campaign, one taking several years before desired results are seen? He surveyed a total of 499 U.S. and Canadian plant managers and found that successful firms see measurable benefits of the quality management efforts in 2-3 years. In addition, he found that higher levels of top management commitment, customer focus, supplier relations, design quality, training, use of quality management tools, and employee involvement were associated with better operational results. Ahire (1996) suggested that execution level would continue to be associated with performance in the future.

Ellington, Jones, and Deane (1996) studied 500 manufacturing firms and identified eight components of quality management adoption. The dimensions they identified were: 1) customer focus, 2) breadth of quality definition, 3) managerial role, 5) employee involvement, 5) process capability, 6) vendor and manufacturing conformance, 7) priority and structure for continuous improvement, and 8) use of quantitative measurement systems. Ellington, et al. used cluster analysis to group firms based on level of execution in these key eight areas. ANOVA tests, similar to the methodology used in this research, showed significant relationships between cluster membership and firm performance. Higher levels of quality management implementation intensity were found to be associated with higher firm performance.

Douglas and Judge (2001) surveyed 229 senior hospital administrators and noted that adoption level was positively related to performance. A total of seven quality management components were used in the study: 1) top management involvement, 2) breadth of quality philosophy, 3) quality-oriented training, 4) customer focus, 5) process improvement, 6) management

by fact, and 7) use of TQM methods. An aggregate average of the seven was computed for each firm and this average was used as the TQM practices variable in a subsequent regression analysis.

The essence of contingency theory is that an organization's processes must fit the environment, and that not all environments are the same. A classic work in the field is that of Burns and Stalker (1961). They proposed two basic organizational structures in their work with U.K. manufacturing firms. The first, a mechanistic structure, features centralized and formal decision making, with strict rules and top-down communication. Decisions are made at the top and employees have a very narrow set of responsibilities. The second, the organic structure, features flatter, informal communication lines and flexible roles. Decision making is decentralized and responsibility and authority are pushed as low as possible.

Lawrence and Lorsch (1967) studied firms in plastics, food processing, and can manufacturing. Firms in these industries were selected owing to differing levels of environmental uncertainty in each. They found that no one set of practices fit all three industries; that complex and unstable environments better fit an organic structure, while a mechanistic structure should be deployed in a stable environment. Note that the mechanistic environment maps to a quality management implementation that relies heavily on tool deployment, whereas the organic structure links to a more team-based implementation.

Terziovski and Samson (1999) surveyed 1,341 manufacturing firms in New Zealand and Australia. Participating firms were mixed in size and industry classification. The authors suggested that quality management is best implemented when applied as a strategic initiative, linked to activities on the "shop floor" (p. 228). They tested this relationship by factor analyzing 40 quality management variables (a procedure incorporated in this research), followed by analysis of variance routines. Terziovski and Samson found that quality management practice and organizational performance were significantly related, and that industry sector and firm size have an affect on quality management program effectiveness. As a result, they advocated that no one set of quality management practices will be effective across different industries, noting that manufacturing firms in wood processing industry had lower levels of implementation intensity that than firms in the metals industry.

Yusof and Aspinwall (2000) observed that few small- to medium-sized company quality management frameworks have been presented in the literature. Their review showed that existing work promotes some type of step-wise implementation. In addition, they reported that small-business managers might be confused as to where to begin, given the proliferation of implementation strategies in the quality management literature taken as a whole.

Ingle (2000) proposed four quality implementation approaches in her work with automotive component manufacturers in Ireland. The strategic approach is based on the idea that departments within organizations can provide competitive advantage when these functions are linked to both business strategy and long-term success. This type of implementation requires greater planning and

commitment to be successful. Plans must be shared at all levels of the organization and changes allowed at the functional level that would best support the aims of the organization in total.

The philosophical approach emphasizes more human resource involvement and flatter organizational structure. The focus is on giving employees not only responsibility but also the authority to achieve common goals within an overall quality management culture.

Firms that take a continuous improvement approach are characterized as learning organizations that experiment and use continuous improvement tools. The idea is that the tools are deployed to analyze what happened in the past and how the business can shape future initiatives and processes. This deployment means that the driver of continuous improvement is organizational learning, not simply the tools themselves.

A selective adoption approach is identified by firms initially picking and choosing initiatives with a view towards eventually moving to full adoption, as long as the selected initiatives work. Ingle notes that the selective adoption approach has not been examined in the literature heretofore, a gap we seek to close in the current research.

WHAT IS TOTAL QUALITY MANAGEMENT (TQM)

While scholars continue to write their own and varied definitions of total quality management (Ingle, 2000), we believe that TQM is best operationalized by Hackman and Wageman (1995). They championed that quality management is an all or nothing process consisting of five core features: 1) Customer focus, 2) supplier relations, 3) cross-functional teams, 4) scientific thinking and statistics, and 5) process management heuristics. The process is binomial (0,1) since one either deploys all five or one doesn't practice TQM. Therefore, those firms that say they are customer focused, yet ignore statistical tools such as SPC, are not practicing TQM. Under this definition, firms using step-wise adoption methods would not be practicing TQM until their implementation efforts were complete. We believe that Hackman and Wageman's definition is appropriate as the five core features map to the teaching of the guru's, ISO requirements, the Baldrige Criteria, and work of recent scholars, tying all of them together in one concise package. The efficacy of Hackman and Wageman's definition has not been previously tested; another gap the present research seeks to close.

METHODOLOGY

This research attempts to answer three questions: 1) Is implementation, in practice, related to performance in small- to medium-sized firms, 2) Does Hackman and Wageman's definition hold up under empirical testing, and 3) Does industry sector have an impact on the outcome of quality management initiatives. The answers to these three questions will serve as a basis to discuss if TQM is best deployed as a contingent process.

Data used to answer the research questions were collected from a random sample of 210 small- to medium-sized manufacturing firms (SMMs) located in the Southeastern United States. We elected to investigate these firms since they are key contributors to the economy, providing most of the opportunity for employment (Gunasekaran, Forker, & Kobu, 2000). In fact, data from the latest available U.S. Census report show that firms with = 999 employees hire fully 80% of all those working in the manufacturing sector. In addition, SMMs account for 73.8% of total manufacturing payroll (U.S. Bureau of the Census, 2001).

There are many notions as to what constitutes a small business (Yusof & Aspinwall, 2000). For example, Gunasekaran, et al. (2000) studied firms in the U.K. with 500 or less employees. Tseng, Tansuhaj, and Rose (2004) sampled firms with as many as 1,500 workers, noting that this approach was consistent with certain maximums of the US Small Business Administration. For the purposes of this study, we take the midpoint and define SMMs as those with less than 1,000 employees on site, consistent with Moini (1991).

A total of eight quality management elements were evaluated in the study. The internal consistency of the elements was checked using reliability analysis, which shows how the items are related to each other. The Cronbach's Alphas for those elements range from .74 to .87, a result satisfactory for this type of analysis (Nunnally, 1978). The quality management elements are presented in Table 1.

Table 1: Quality Management Elements

Feature	Measures	Description
1. Customer focus	15	Assessing and meeting customer needs.
2. Breadth of quality definition	7	Centers on design quality of both the product and support processes.
3. Analysis and results	12	Quality analysis and process capability in line and staff functions.
4. Quality of conformance, Suppliers	7	Supplier capability and performance.
5. Quality of conformance, Manufacturing	9	Manufacturing process management.
6. Continuous improvement	29	Employee involvement, improvement priority, and improvement structure.
7. Role of the first line manager	7	Managerial functions.
8. Training: Managerial, Supervisory & Employee	6	Leadership and technical training.

The elements and underlying survey variables center on fundamental concepts identified in the previous empirical work. For example, both Ellington et al. (1996) and Douglas & Judge (2001) included measures of customer focus, breadth of quality definition, continuous improvement, managerial role, and process capability/quantitative measurement systems. In addition, the training variables used in this research are linked to Ahire (1996), while the conformance measures are those used by Ellington et al. (1996). Finally, the eight elements map directly to quality management precepts embodied in both the Malcolm Baldrige Award (National Institute of Standards and Technology, 2004) and the five core features of TQM proposed by Hackman and Wageman (1995).

DEMOGRAPHICS

A key goal of the research is to test for interaction between industry type and the outcome of TQM programs. Thus, a heterogeneous sample is needed. Table 2 presents a summary of industries represented in the survey.

Table 2: Distribution of Survey Respondent by Industry

Industry Classification	Frequency	Percent
Textile Mill Products	34	16.1%
Paper and Allied Products	28	13.3
Fabricated Metal Products	23	11.0
Food Products	19	9.2
Machinery	19	9.2
Apparel and Finished Products	18	8.7
Lumber and Wood Products	15	7.3
Rubber and Plastic Products	13	6.4
Chemical and Allied Products	9	4.1
Clay, Concrete, Glass, and Stone	6	2.8
Primary Metals	2	.9
Miscellaneous Manufacturing	24	11.0
Totals	210	100%

The respondent percentages by industry feature a broad cross-section of manufacturing industries. In addition, the plastics, metals, food products, and wood industries discussed in the contingency literature are included in the sample. This broad mix of firms augurs well for generalizability of the results to the population of small-medium sized manufacturers, and for our

ability to test whether TQM is a process contingent on industry type, as suggested in the literature review.

RESEARCH APPROACH

The first step in the analysis was to factor analyze the survey variables that formed the eight quality elements in an effort to identify underlying quality management constructs. Firms were then clustered into groups on the basis of those factors. The resulting groups formed a hierarchy of quality management implementation or execution. Hierarchy membership (independent variable) and performance (dependent variable) were tested using ANOVA routines, and minimum significant difference tests were conducted to determine differences in group performance. Chi-Square analysis was then used to determine if the mean group performance varied by industry. Finally, cluster profiling was deployed to determine the practices of higher performing groups, and if these practices could be mapped to Hackman and Wageman's definition of TQM (1995).

UNDERLYING QUALITY MANAGEMENT CONSTRUCTS

To address research question 1, principal components analysis was conducted separately on each of the eight quality management elements using the latent root criterion (mineigen = 1) to determine significant factors (Hair, Anderson, Tatham, & Black, 1995). These analyses resulted in a total of 29 factors. Each item making up the respective orthogonal factor had a loading of 0.38 or greater, which supports construct validity (Terziovski & Samson, 1999). Table 3 summarizes the factor analysis and describes each of the quality management dimensions.

Table 3: Underlying Quality Management Factors

Element	Factor Name	Description
1.Customer Focus	F1-TRAD	Customer interaction by non-traditional groups.
	F2-CUSTREQ	Emphasis on meeting customer requirements.
	F3-CUSTFEED	Customer feedback practices.
	F4-TRADIT	Customer interaction by traditional groups.
2.Quality Def. Breadth	F5-AFTRSALE	After sale service emphasis.
	F6-DELVPERF	Delivery performance emphasis.
3.Analysis & Results	F7-QUANTSUP	Use of quantitative measurement in support areas.
	F8-QUANTPRD	Use of quantitative measurement in production areas.
	F9-CUSTLINK	Customer requirement-production process linkage.

Table 3: Underlying Quality Management Factors		
Element	Factor Name	Description
4.Vendor Conf.	F10-VENDQUAL	Vendor emphasis on quality.
	F11-VENDSERV	Vendor emphasis on service.
5.Mfg. Conf.	F12-PROSTOOL	Use of process tools.
	F13-PREVTOOL	Use of prevention tools.
6.Continuous Impr.	F14-SUPTPROB	Support department involvement.
	F15-PRODPROB	Production team involvement.
	F16-SUPLPROB	Supplier team involvement.
	F17-COMPQUAL	Link between compensation and quality.
	F18-XTRFOCUS	Externally-focused performance meas.
	F19-NTRFOCUS	Internally-focused performance meas.
	F20-INDIVSUG	Individual suggestion approach.
	F21-TEAMAPCH	Team approach.
7.Mgr Role	F22-FACILTATE	Emphasis firm places on facilitative activities.
	F23-TRDITION	Emphasis on traditional supervisory roles.
8.QM Training	F24-MGTQM	Hours managers trained in leadership, etc.
	F25-MGTTOOLS	Hours managers trained in use of QM tools.
	F26-SUPQM	Hours supervisors trained in leadership, etc.
	F27-SUPTOOLS	Hours supervisors trained in QM tools.
	F28-EMPQM	Hours employees trained in leadership, etc.
	F29-EMPTOOLS	Hours employees trained in use of QM tools.

The table shows that each of the factors features a logical theme and maps to one of the eight quality management elements. The total variance accounted for by the factor solutions ranged from a low of 53.63% to a high of 76.28%, a result Hair et al. suggest is satisfactory for this type of study (1995).

QUALITY MANAGEMENT EXECUTION

Factor scores were computed for each of the 29 factors, and these scores were standardized to remove scaling differences. Using these standardized factor scores, the 210 firms in the study were clustered into groups. Consistent with Ellington, et al. (1996), a four-group solution was found. Table 4 details the results of the analysis.

Table 4: Standardized Factor Scores by Group				
Measure	Cluster 1	Cluster 2	Cluster 3	Cluster 4
NONTRAD	-.83986	-.39560	.52826	.34511
CUSTREQ	-2.17874	-.10477	.09092	.50726
CUSTFEED	-1.09314	-.38549	.30724	.76255
TRADIT	-1.11268	.17234	-.16590	-.02168
AFTRSALE	-1.27950	-.33604	.37054	.61196
DELVPERF	-1.23314	-.06963	.14922	.22538
QUANTSUP	-.69148	-.38379	.30597	.63403
QUANTPRDD	-2.01219	-.21949	.41799	.28808
CUSTLINK	-1.37937	-.47974	.36884	1.01465
VENDQUAL	-1.63969	-.50895	.52552	.80039
VENDSERV	-.80398	.01885	-.02812	.16467
PROSTOOL	-1.20734	-.43392	.49251	.76546
PREVTOOL	-1.91036	-.00479	.13865	.25615
SUPTPROB	-1.12349	-.22534	.10226	.69688
PRODPROB	-.50526	-.08945	-.05205	.48058
SUPLPROB	-.35199	-.41837	.39477	.51117
COMPQUAL	-.68251	-.42453	.34931	.87670
XTRFOCUS	-.50565	-.30837	.40401	.34947
NTRFOCUS	-1.64594	-.12690	.22621	.38767
INDIVSUG	-.47105	-.11768	.00615	.43881
TEAMAPCH	-1.60124	-.28933	.29985	.66392
FACILTATE	-1.19410	-.08438	.12635	.29116
TRDITION	-.42644	-.16179	.04847	.47660
MGTQM	-.53863	-.50320	.00074	1.56101
MGTTOOLS	-.65172	-.46746	-.02498	1.58371
SUPQM	-.63510	-.30901	-.19330	1.52737
SUPTOOLS	-.64206	-.39450	-.07813	1.54363
EMPQM	-.58274	-.46158	.04938	1.47956
EMPTOOLS	-.60382	-.41852	.06874	1.41074
Firms/Cluster	8	101	65	36

Group 4 scores are generally very high across all 29 quality management execution factors. Group 3 scores are somewhat lower than group 4, but higher than group 2. Finally, group 1 scores are generally very low on all factors.

Thus, we describe group 4 firms as holistic quality management implementers. Group 3 firms show a relatively high level of quality management implementation, albeit at a lower level than the holistic adopters. Group 2 firms appear to be unfocused in their quality management efforts, seeming to pick and choose their initiatives. Therefore, group 3 and group 2 members deploy a selective adoption implementation approach. Finally, those in group 1 ignore the quality management model altogether.

EXECUTION LEVEL VS. PERFORMANCE

The first research question centers on whether group membership within the quality implementation hierarchy is statistically related to firm performance. To answer this question, the following measures were used to capture firm performance: 1) return on sales, 2) return on assets, 3) return on investment, 4) overall profit, 5) delivery dependability, 6) delivery speed, 7) customer service, 8) customer service, 9) product quality, 10) technical support, 11) market share, and 12) pricing. The 12 measures were factor-analyzed to reduce dimensionality. Two underlying factors of firm performance were identified: financial performance and operational performance. Financial performance consists of traditional measures such as return on sales, return on assets, return on investment, and overall profit. The operational performance dimension is a combination of delivery dependability, delivery speed, level of customer service, product quality, and level of technical support. These two performance factors were used as dependent variables in subsequent ANOVA tests.

Table 5: Scheffe's Minimum Difference Tests
Firm Performance and Group Membership

Financial Performance			Operational Performance	
Grouping	Mean	Cluster	Grouping	Mean
A	.5243	Holistic	A	.5940
B A	.0447	High	BA	.2748
B A	-.1768	Unfocused	B	-.2507
B	-.7134	NonAdopter	C	-1.2539

*Significant differences among groups are denoted by different letter groupings. Groups with the same letter(s) are not significantly different.

The relationship between the dependent variable firm performance (both operational and financial), and the independent variable, level of quality execution (the four previously-discussed clusters), was tested using two analysis of variance models (ANOVA). The ANOVAs show that both financial performance (200 d.f., F = 6.11, Sig. = .0001) and operational performance (200 d.f., F = 4.87, Sig. = .0005) are related to position in the hierarchy, indicating significant differences in performance across groups.

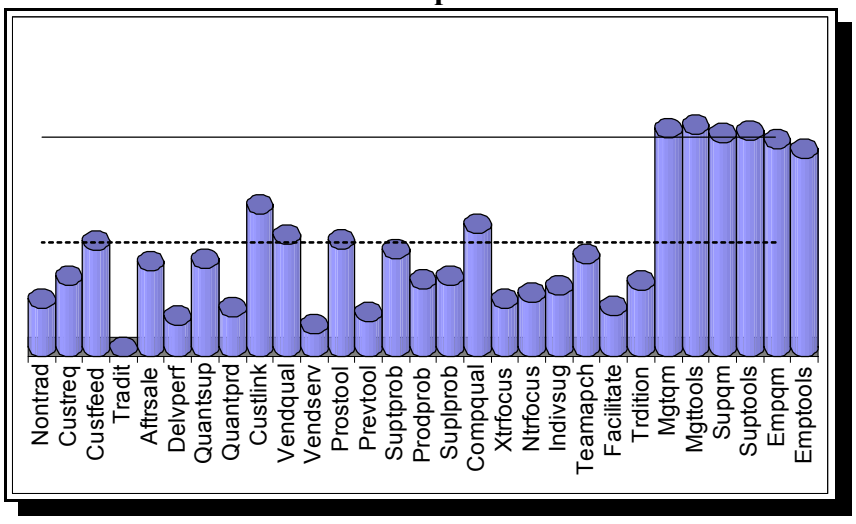
The analysis of variance tests only tell us that at least one of the groups is statistically different than the others, but not the direction of the relationship. In order to identify specific differences among the groups, Scheffe's minimum difference tests were conducted on each of the dependent variables. The results of the minimum difference tests are shown in Table 5.

Holistic implementers (group 4) were consistently in the highest performance group, followed by high implementers (group 3), marginal or unfocused implementers (group 2), and nonadopters (group 1), respectively. These results provide empirical support for the contention that higher levels of quality management implementation are associated with both higher financial and operational performance.

CLUSTER PROFILE

Figure 1 shows the relative emphasis that the holistic implementers place on each of the underlying quality management factors, in practice. Higher levels of deployment are shown as taller cylinders.

Figure 1
Holistic Adapter Profile



Notice that very heavy emphasis is placed on training and linking customer requirements to the production process. In addition, relatively high emphasis is given to facilitating customer feedback, working to improve supplier quality, deploying process tools on the manufacturing floor to improve conformance, involving support functions in the problem-solving process, and using a team approach in continuous improvement efforts. But, do these highly deployed initiatives map to Hackman and Wageman (1995)?

Yes, they do. Notice that every highly deployed initiative fits well into their model of TQM. These firms not only focus on customer needs, but also their processes are designed so that those needs are met. Suppliers are made part of the overall "team" and are part of quality improvement initiatives. Cross-functional teams are deployed throughout the organization and feature members from support departments. Finally, everyone is trained in scientific thinking and process management heuristics.

These results and those of the previous section provide strong support for the contention that Hackman and Wageman's core features of TQM are important and hold up under empirical testing. We agree with Ingle (2000) that the definition of TQM should be clear to practitioners, and that academicians create confusion (havoc?) with various and sundry definitions of total quality management. Therefore, we advocate the consistent use of the five core features to define TQM, thereby ending any potential misunderstanding as to exactly what total quality management consists of, in practice. The final question of this study is whether these results are contingent on industry sector membership, which is the subject of the next section.

INDUSTRY SECTOR EFFECTS

We tested for sector effects using Chi-Square analysis. This goodness of fit test compares observed and expected sets of frequencies. If there is no difference, the two frequencies should be approximately equal (Lind, Marchal, & Mason, 2002). We tested for differences in industry sectors by comparing the makeup of the four quality management clusters (holistic through non-adopters, respectively). The p-value of the test was .138 (51 d.f.), suggesting no difference in industry classification by cluster, an outcome that diverges from Terziovski and Samson (1999) and classic contingency theory. We interpret this significant finding to mean that TQM implementation for SMMs is not a contingent process. These manufacturers appear to be best served by a holistic implementation of TQM.

In addition, notice that the use of cross-functional teams and supplier relations maps to an organic structure, whereas statistics and scientific thinking relate to a mechanistic structure. The two structures are said to be distinct in the contingency theory literature. That holistic firms deploy both structures concurrently is further evidence that suggests TQM is not a contingent process.

Table 6: TQM Core vs. Holistic Group Implementation Profile		
Hackman & Wageman Core	Factor	Factor Description
Customer Focus	Custreq	Meeting customer requirements.
	Custfeed	Customer feedback practices.
	Aftrsale	Service after the sale.
	Custlink	Customer requirement- production process linkage.
Supplier Relations	Vendqual	Initiatives to improve supplier quality.
	Suplprob	Supplier team involvement in continuous improvement.
Cross Functional Teams	Suptprob	Support dept. involvement in continuous improvement
	Teamapch	Team approach to continuous improvement.
	Mgtqm	Management training in leadership, communications, customer service, TQM, and team-building.
	Supqm	Supervisor training in same areas above.
	Empqm	Employee training in same areas above.
Statistics and Scientific Thinking	Quantsup	Use of quantitative measurement in support areas.
	Mgttools	Management training in data collection & analysis, problem solving, SPC, and facilitation.
	Suptools	Supervisor training in same areas above.
	Emptools	Employee training in same areas above.
Process Management Heuristics	Prostool	Use of process management tools.
	Mgttools	Management training in data collection & analysis, problem solving, SPC, and facilitation.
	Suptools	Supervisor training in same areas above.
	Emptools	Employee training in same areas above.

CONCLUSION

The purpose of this study was to investigate relationships among quality management implementation and performance. This research was able to discern significant relationships between level of implementation and firm performance. Irrespective of industry classification, higher levels of TQM execution were shown to be associated with higher levels of both financial and operational performance. Simply put, it appears that implementation is not a contingent process and the more holistic the execution or implementation of total quality management, the more successful the firm, relative to its peers.

The results suggest that while taking a Pareto (Price & Chen, 1993), step-wise (Huxtable, 1995; Ho and Fung, 1994), or selective adoption approach (Ingle, 2000) is not fatal, SMMs that are able to deploy quality management on a wholesale basis, or those that eventually reach holistic levels, should be more successful than those taking a more piece-meal quality implementation strategy. Therefore, we add one more implementation strategy to that of Ingle's work (2000). We term the holistic implementation methodology the "Core" strategy.

The results of this study also provide empirical support for the use of Hackman and Wageman's five essential features as the consistent definition of TQM in practice, and the notion that total quality management implementation strategies of small- to medium-sized manufacturers should not be viewed as a contingent process based on industry type.

While our conclusions are supported by empirical testing, one should be cautioned that there is always a small chance of Type I error. It is a fact that data were self-reported and suffers from the standard limitations of such approaches. Second, our data are cross-sectional and, as such, represent only one period of time. Temporal affects could result in different conclusions. Finally, our sample is limited to SMMs conducting business in the Southeastern United States, and outcomes might not hold for either large manufacturing firms or those located in other parts of the globe.

Further research into TQM implementation strategy is necessary. Are there significant cross-cultural differences in implementation results? What happens when a firm revises its TQM approach over time? Does the "Core" implementation strategy hold for service firms? These are interesting questions that beg investigation.

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UNDERSTANDING TECHNOLOGY TRANSFER EFFECTIVENESS IN JAPANESE ORGANIZATIONS: A TEST OF CONTINGENCY THEORY

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ABSTRACT

This paper describes an empirical test of the Teasley and Robinson (2005) model of knowledge-based innovation within large multinational organizations. The test utilized a data sample of product development teams located in Japanese R&D divisions. The model is based on structural contingency theory and proposes that a multivariate "fit" of structural dimensions (information richness and amount) with their contextual counterparts (technological analyzability and variety) predicts technology transfer effectiveness. Consistent with Schoonhoven (1981), four bi-variate models tested assumptions of symmetry and linearity required for assessing multivariate, systems models of contingency theory. Under conditions of high technological variety, a correspondence between information amount and technology transfer effectiveness was supported. However, within low variety conditions, the predicted correspondence was reversed and violated requisite assumptions. Under conditions of reduced analyzability, data supported a correspondence between information richness and technology transfer effectiveness, but for more analyzable conditions, the relationship was reversed. A systems-fit model was then tested to assess the effects of a multivariate fit incorporating both contingency conditions simultaneously. The fit model provided moderate support for predicted associations between fit and technology transfer effectiveness. Cultural considerations were seen as possible reasons for deviations from model and contingency theory predictions.

INTRODUCTION

Contemporary scholars have refocused the lens of contingency theory to explain organizational phenomena (Donaldson, 2001: Moon et al., 2004; Hambrick & Cannella, 2004; Lin & Germain, 2003; Burton, Lauridsen & Obel, 2002). Contingency theories posit that organizations or work units are most effective when their structure is aligned to particular elements of their contextual environment. Although contingency perspectives are less prominent today than during earlier stages of organization theory (Woodward, 1958; Aken & Hage, 1971; Lawrence & Lorsch,

1967), recent perspectives portray learning organizations as information processing systems operating in the spirit of classical and contingency design (Sankar, 2003; Teasley & Robinson, 2005). Within these perspectives, it is the alignment between information systems and their shifting contextual conditions that impacts dependent constructs such as knowledge creation or technology transfer. Innovative or entrepreneurial organizations are those that accumulate knowledge through adjusting their information processing subsystems to the dynamics of their operational settings.

A compelling representation of technology transfer effectiveness models knowledge-based entrepreneurship within the information processing archetype (Teasley & Robinson, 2005). The authors argue that fashionable notions of "learning organizations" and "knowledge-based competencies" can derive appropriate theoretical roots from the more seminal views of contingency researchers. Their research develops these theoretical arguments though construction of an information processing contingency model to explain entrepreneurship and innovation within team-based organizations. The model is articulated to demonstrate a cultural proclivity for knowledge-based entrepreneurship as exhibited within the traditions of Japanese technology transfer.

This article describes a test of the Teasley and Robinson model within a sample of Japanese multinational product development teams. It reviews the technology transfer model and its relevant contingency hypotheses. The review is followed by a description of the sample and the methodology used for testing the model. Results are presented and also a discussion of the findings. The concluding section describes implications of the study and suggested directions for additional research.

THEORETICAL BACKGROUND

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). This implies a distinct relocation of knowledge between autonomous entities requiring the existence of both a "supplier" and a "receiver" of new technology. It further implies that relocation is "successful", or "effective", only when the transfer is complete and adds value to a receiver's competencies. Kodama & Morin (1993) argued that technology transfer is most successful when applied within a receiver-active paradigm where receivers engage aggressively in the transfer process. Fundamental to their receiver-active perspective is the notion of building knowledge through the processing of relevant information. Effective technology transfer stems from a receiving group drawing critical information not only from the technology supplier but from other sources both within and outside its organizational boundaries. Empirical research has demonstrated positive relationships between product development success and cross-functional information sharing (Sarin & McDermott, 2003; Huang & Newell, 2003; Olsen, et al, 2001), and knowledge-based interaction with users (Urban

& von Hippel, 1988; Lilien et al, 2002), suppliers (Takeishi, 2001; Primo & Admundson, 2002) and other outside-the-firm service or technology providers (Starbuck, 2001; Nicholls-Nixon & Woo, 2003).

Substantial research has linked technology transfer effectiveness with structural adaptations of communication or information processing (Allen 1966; Allen & Cohen, 1966; Ettlie, 1976; Fischer, 1979; Tushman, 1977; Barley, 1990). Weick (1987 p. 87) conjectured that "interpersonal communication is the essence of organization because it creates structures that affect what else gets said and done and by whom". While organizational theorists have typically focused on the effects of formal structure on communication, communication theorists have argued that it is communication that affects structure through emergent, enacted patterns of interaction (Jablin, 1987). Communication researchers posit that the most meaningful aspects of structure are found in emergent interactions among people (Monge & Eisenberg, 1987). Communication provides not only a reasonable measure of structure but also a suitable proxy of interpersonal knowledge flow. Information processing broadens the scope of communication inquiry by encompassing the population of knowledge sources, not just those limited to interpersonal interactions.

Building on the receiver-active paradigm, two situational dimensions are useful to describe the 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 & McIntosh, 1981), 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. Teasley, 1998). 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. These dimensions form a logical partition of environmental context and set the foundation for a structural contingency approach to assessing technology transfer effectiveness (Lawrence & Lorsch, 1967).

Effective transfer technology requires that a project 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 & Nadler, 1978), and matching the richness of the information to its equivocality (Daft & 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. "Information richness" is defined as the ability of information to enhance understanding through the utilization of various media types. Figure 1 reflects the notions of structural contingency theory with the four categories of technological requirements and their corresponding information processing capabilities of receiver groups (Perrow, 1967; Daft & McIntosh, 1981).

When receiver groups develop their information processing capabilities appropriately, they achieve a "fit" (Drazin & Van de Ven, 1985; Venkatraman, 1989; Gresov, 1989) with the requirements of a technology transfer. 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 include 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 ground-breaking engineering discovery.

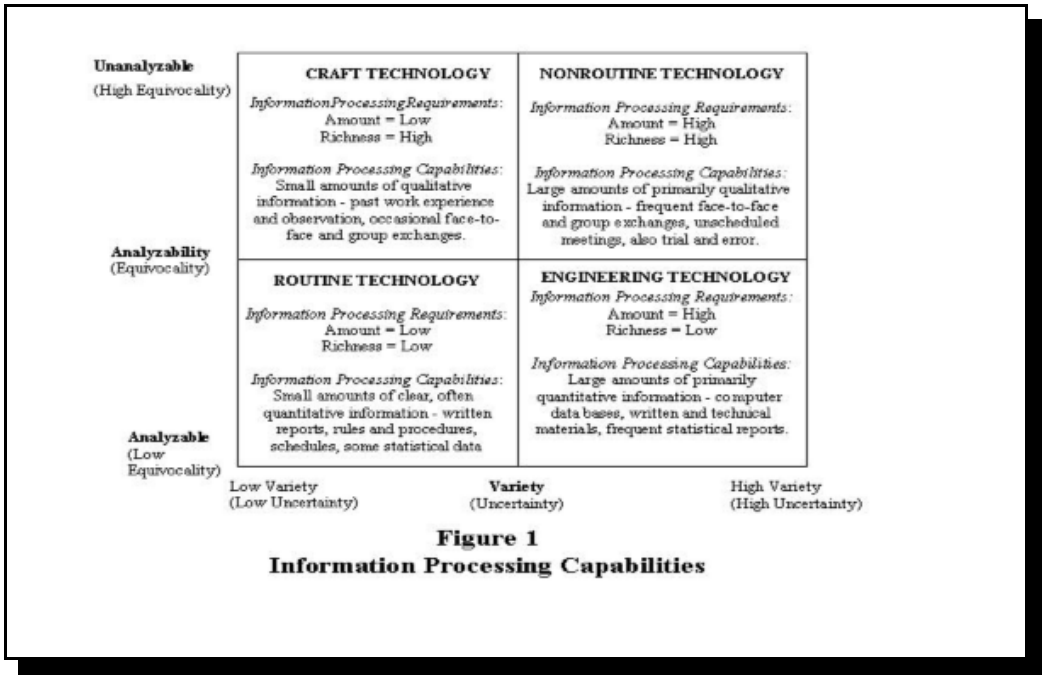

Figure 1
Information Processing Capabilities

Figure 2 shows the expected relationships between a project's information processing requirements and capabilities, fit, technology transfer effectiveness. "Technology transfer effectiveness" is defined as the degree to which technology transfer tasks increase the productivity of receivers, and simultaneously enhance the satisfaction and performance of the receiving group. Effectiveness is a composite of three project-oriented, dependent variables that adhere to the requirements of the general criteria model (Campbell, et al., 1970). The general criteria model advocates the use of three distinct levels of criterion development to maximize the operationalization of outcome phenomena. The suggested measurement levels include "individual characteristics", "process or job behavior outcomes", and "organizational results". The first criterion, "Productivity", is an individual characteristics proxy reflecting the degree to which project members produce ideas and technical solutions that are superior is both quantity and quality. "Satisfaction' constitutes the second criterion as a process outcome that measures the degree to which project members are satisfied with their own work interactions and those of the entire team. The third criterion, "Project Effectiveness", is an indicator of organizational results that is the degree to which project work is completed on schedule, and within budgetary and technical constraints.

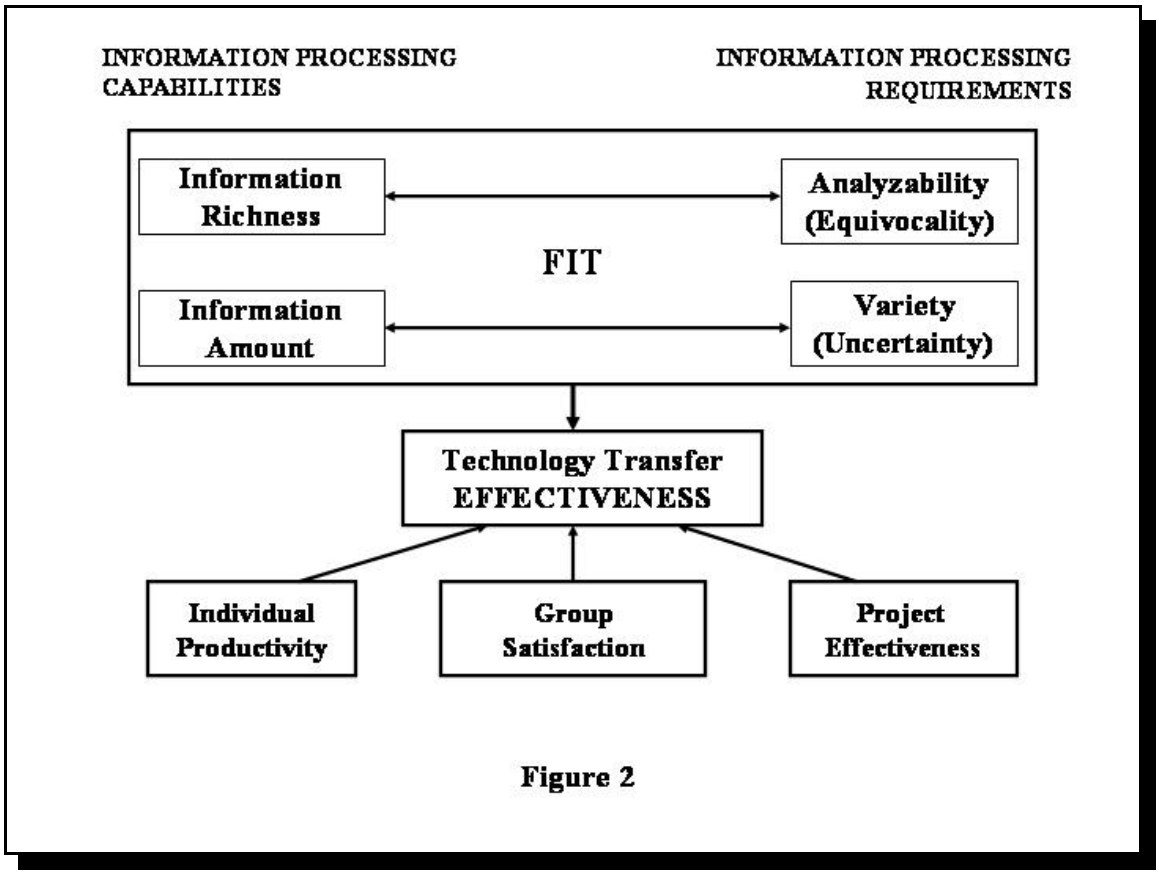

Figure 2

Contingency researchers have noted a compilation of incongruous findings produced by the broader body of studies (Schoonhoven, 1981; Fry, 1982; Donaldson, 2001). Fry (1982) attributed these inconsistencies to several factors (both within single studies and across the broader body) including a) incompatible conceptualizations of technology and structure; b) varied levels of analysis; and c) the mix of objective and perceptual measures. Schoonhoven (1981) argued a separate view that most contingency researchers neglected to test a set of core assumptions that were instrumental to the valid assessment of contingency hypotheses. Without testing these vital assumptions, research conclusions were subject to systematic methodological error. The first assumption of concern was that outcome variance was driven not only by the singular effects of independent variables but also by their interactive effects. Exclusion of specifically-constructed interactive terms would fail to partition variance according to its corresponding effects.

The additional concern was related to symmetrical and linear conditions of the independent variables utilized by contingency researchers. According to Schoonhoven (1981), contingency relationships should be symmetrical across the entire range of contextual variables. In the case of the present research, this simply infers that if elevated uncertainty requires a high level of information interaction, then reduced uncertainty should require a symmetrically lower level. From a practical or conceptual standpoint, the argument is sound. Excessive application of knowledge resources to well-defined or analyzable environments would lead to inefficiencies of scale and unnecessary dissipation of intellectual resources. Similarly, underutilization of those resources in highly-uncertain or un-analyzable environments evokes knowledge deficits that lead to suboptimal performance outcomes. Not only should these relationships be symmetrical, argued Schoonhoven, but they should also be linear, exhibiting a one-to-one correspondence between their contextual extremes. These views are reflected in the articulation of the following hypotheses.

H1a: When technological variety is low, increases in information amount will negatively influence technology transfer effectiveness.

H1b: When technological variety is high, increases in information amount will positively influence technology transfer effectiveness.

H2a: When technological analyzability is low, increases in information richness will positively influence technology transfer effectiveness.

H2b: When technological analyzability is high, increases in information richness will negatively influence technology transfer effectiveness.

Venkatraman and Prescott (1990) raised several issues pertinent to the notions of "fit" or "alignment" within structural contingency theory. They observed that prior research on strategy alignment can be categorized into either a reductionistic or a holistic perspective. The former perspective reduces fit to one or a few dimensions that methodologically conceptualize alignment

as a set of bi-variate alignments to correlate with performance. This bi-variate perspective is evident in the hypotheses offered above, and typically employs ANOVA, interactive regression, or subgroup analysis as testing methodologies. The more contemporary view retains the holistic nature of fit or alignment to examine its overall effectiveness on performance. The authors argue for separate methodologies to test hypotheses within each of the two perspectives. If such correspondence between conceptualization and methodology is lacking there is cause for concern within strategy research. Various holistic methodologies include cluster analysis (Hambrick, 1984), q-factor analysis (Miller & Friesen, 1984), and pattern analysis (Drazen & Van de Ven, 1985). For their own study, Venkatraman and Prescott (1990) advocated the pattern analytic method which measures a work unit's resource allocation profile as compared to an "ideal" profile. The attractiveness of the method is its ability to recognize a multivariate deviation from a performance-based ideal and, thus, its capacity to test appropriate models of multiple contingency theories.

The present study extends earlier work by Keller (1994) who hypothesized a holistic fit between variety (routineness), analyzability, information amount and project effectiveness. Keller's data linked a performance outcome to the fit of variety with information amount but failed to support a similar linkage within the analyzability context. The requirement for methodological correspondence advocated by Venkatraman and Prescott, 1990 suggests a missing connection in Keller's theory. Given the distinct contextual attributes of variety and analyzability, two distinct conceptualizations of information processing should be required to validate the logic of a holistic fit proposition. The Keller model, however, theorized alignment for both contexts with information amount only. Perrow (1967), Weick (1989) and others have clearly differentiated the disposition of variety (or routineness) from analyzability. The holistic perspective requires a co-alignment of these environmental contexts with separate and unique structural responses. Information richness was shown above as a theoretically-suitable response for technological analyzability and its inclusion within a holistic interpretation of a multiple contingency model is compelling. The following fit hypothesis broadens the Keller approach to include information richness as an explanatory effect operating within analyzable environments.

H3: 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.

METHODOLOGY

A longitudinal sample of primary data was collected directly from project team personnel. The project teams were based in Japan conducting manufacturing process developments. The teams 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 research instruments were used to generate the sample: an individual questionnaire and an eight-week longitudinal communication log. Individual questionnaires measured each of the two dependent variables "group satisfaction" and "project effectiveness" utilizing multi-item, Likert-type scales. Questionnaire items 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 and reflected respondents' experiences as related to the entire eight-week period.

The communication log measured the dependent variable "productivity" and all information processing variables (variety, analyzability, information richness and amount). 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 for productivity were also included on the communication log within a section of 17 Likert-type scales. Prior to subsequent data analysis, outliers were purged and any missing data values were replaced with mean-derived substitutes.

Both 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 best assure their cultural equivalence (Douglas & Craig, 1983). 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 sufficiently reliable and conceptually-suitable scales for variety, analyzability and project effectiveness. New measures or modifications of existing scales were constructed for the remaining four variables productivity, satisfaction, information amount and richness. All items were assembled to compose the two research instruments. Measurement data were subjected to a systematic screening process before being entered into statistical procedures. Screening began with an assessment of distribution normality followed by appraisals of both reliability and construct validity. The normality requirement was relaxed for variety and analyzability since statistical use of those variables was limited to sample separation procedures. The additional five variables required and adhered to normal distributions.

Measurement standards conformed to the reliability requirements of Nunally (1978), and to the construct validity requirements suggested by Tabachnick and Fidell (1989). For reliability assessment, inter-item correlations were required to yield Cronbach coefficient alpha scores of at least .50 to .60, consistent for early stage research. 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 Cronbach Alphas of .69 and .61 respectively.

Fit was operationalized by a mathematical deviation-score profile analysis and was based on the following formula (Drazin & Van de Ven, 1984; Venkatraman & 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_{i2} = the ideal profile score for information richness
X_{n1} = an individual's information amount score
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 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% ideal profile scores.

Technology transfer effectiveness was conceptualized as three facets of phenomena: individual outcomes, interpersonal process, and organizational outcomes (Campbell et al., 1970). As a facet of individual outcomes, 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.

A proxy for organizational outcomes was measured as "project effectiveness" on the individual questionnaire. Three items composing this measure evaluated how well the projects achieved their work-oriented goals as the degree of on-schedule work completion, degree of re-work, and the degree of conformance to project budget (Keller, 1986). A factor analysis of the three effectiveness variables loaded cleanly on three distinct factors. Reliabilities for the variables are reported as alpha=.78 for productivity, .89 for group satisfaction, and .63 for project effectiveness. These dependent measures would have benefited from objective corroboration in the field. However, such objectivity was impossible to achieve due to proprietary reservations of participating companies, and due to the author's limited access to company documentation.

RESULTS

Hypotheses were tested with correlation analysis. The zero-order correlation matrix is shown below as Table 1. Tabachnick and Fidell (1989) warn against the multicollinearity of variables with bivariate 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 utilized only to separate the sample and to derive 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.

Hypotheses H1a,b and H2a,b related information processing capabilities to effectiveness within the technological contexts of variety and analyzability. These hypotheses assessed the contingency

assumptions that structure/context interactions should operate symmetrically and in a linear mode across the contextual variable range (Schoonhoven, 1981). Since information processing variables were measured weekly, the four hypotheses were tested against the productivity criterion only since it was the sole dependent variable measured at the weekly level. To test hypotheses H1a and H1b, the dataset was mean-separated on variety forming two sub-samples corresponding to high- and low-range values of variety. For testing hypotheses H2a and H2b, the dataset was similarly split into mean-derived subsets of analyzability yielding two subsamples corresponding to high- and low-range analyzability values.

TABLE 1: ZERO ORDER CORRELATION MATRIX

	PROJ SIZE	VARIETY	ANALYZ	AMOUNT	RICHNESS	FIT	PROD	SATIS	PROJ EFFECT
PROJ SIZE	1.0000								
VARIETY	-0.1237***	1.0000							
ANALYZ	0.1392***	-0.1157**	1.0000						
AMOUNT	-0.2216***	0.1992***	-0.1046	1.0000					
RICHNESS	-0.1956***	0.2222***	-0.0052	0.7216***	1.0000				
FIT	0.2013***	0.0063	0.0613	-0.2822***	-0.3089***	1.0000			
PROD	-0.0280	0.4040***	0.0805*	0.1528***	0.1722	0.1655***	1.0000		
SATIS	-0.0096	0.1895***	0.1149**	0.0678	0.1064	0.0282	0.37112***	1.0000	
PROJ EFFECT	-0.1620***	0.1543***	-0.0223	0.2036***	0.1904	-0.1786***	0.11204**	0.25031***	1.0000

P < .10 **P < .05 *** P< .01-0.1786**

Hypothesis H1a posits that when variety is low, increases in information amount should diminish productivity. Similarly H1b states that when variety is high, increases in information amount should elevate productivity. To test these theories, bi-variate correlations were run between productivity and information amount in both the low- and high-variety sub-samples. Confirmation of the hypotheses would require a negative correlation between information amount and productivity within the low variety sub-sample (H1a), and a positive correlation within the high variety sub-sample (H1b). The results displayed in Table 2 indicate a positive Pearson correlation coefficient of 0.11856 (p=.0412) for the former, and a positive correlation coefficient of .15311(p=.0067) for the latter. The low-variety association (H1a) was significant, but quite weak and in the opposite direction than predicted. The high-variety association was both significant and in the predicted direction. Consequently, H1a was rejected for this sample, while H2a was supported. These results clearly breeched assumptions of linearity and symmetry within the variety sub-sample.

Hypothesis H2a investigated the association between information richness and productivity within the low-analyzability context; and H2b the equivalent association within the high-analyzable contest. Confirmation of H2a required a positive correlation, while H2b required the correlation to be negative. Both hypotheses were tested with bi-variate correlations within the two analyzability sub-samples. Results indicated in Table 2 confirm H2a with a Pearson correlation coefficient of .1301 significant at p<.018 level. The results fail to support H2b, however, with correlation that was positive and of significant value at .3314, at p<.0001. Since the direction of association was inverse to that predicted, H2b was consequently rejected.

TABLE 2: BI-VARIATE CORRELATIONS

LOW VARIETY SUBSAMPLE:					
Variable	N	Mean	Std Dev	Minimum	Maximum
PROD	297	17.9343	3.4590	7.0000	26.0000
AMOUNT	297	15.7340	10.4691	0	36.0000
PEARSON CORRELATION COEFFICIENT: 0.11856, P = .0412					
HIGH VARIETY SUBSAMPLE:					
Variable	N	Mean	Std Dev	Minimum	Maximum
PROD	314	20.9841	3.5806	7.0000	27.0000
AMOUNT	314	19.6656	9.8827	0	40.0000
PEARSON CORRELATION COEFFICIENT: 0.15311, P = .0066					
LOW ANALYZABILITY SUBSAMPLE:					
Variable	N	Mean	Std Dev	Minimum	Maximum
PROD	329	19.2720	3.9557	7.0000	27.0000
RICHNESS	329	46.5471	23.6412	0	106.0000
PEARSON CORRELATION COEFFICIENT: 0.13010, P = .0182					
HIGH ANALYZABILITY SUBSAMPLE					
Variable	N	Mean	Std Dev	Minimum	Maximum
PROD	282	19.7695	3.6793	10.0000	27.0000
RICHNESS	282	47.8936	26.0144	2.0000	134.0000
PEARSON CORRELATION COEFFICIENT: 0.33139, P = .0001					

The fit hypothesis, H3, 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 &Van de Ven, 1985). The profile analysis allows researchers to assess the system effects of multiple contingencies simultaneously. Once deviation scores were attained, they were entered 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; individuals within the same project all shared identical scores on satisfaction and project effectiveness.

Each dependent variable was tested with a pair of regression models. The first of each pair assessed the control variable "project size", and the second assessed the main effect of fit. Table 3 reports the test statistics in the following manner. Its six rows correspond to the control and main effect models for each dependent variable. The "Project Size" column displays regression coefficients for the control variable in each of the six models. Similarly, the "Fit" column displays regression coefficients of fit in each of the three main effect models. The "R^2" column represents the variance explained by each model, while the "F" column displays the incremental semi-partial correlations, or additional variance explained, of fit in each of the main effect models. Significance levels are indicated where applicable.

The control model for productivity indicated a non-significant coefficient for project size, explaining only .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%. Satisfaction models were non-significant for the both the control and the fit associations, with fit explaining 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. With predicted relationships supported in only one of the three main effect models, only partial support for hypotheses H3 is offered within the existing dataset.

TABLE 3: REGRESSION ANALYSES FOR FIT HYPOTHESES

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

DEPENDENT VARIABLE	PROJECT SIZE	RT	R^2	F	ΔR^2
PRODUCTIVITY					
Control Model	-2.1760		0.0008	0.1130	
Main Effect Model	-1.5100	4.215***	0.0313	9.112***	0.0305
SATISFACTION					
Control Model	-0.2270		0.0001	0.0520	
Main Effect Model	-0.3700	0.7300	0.0010	0.2920	0.0009
PROJECT EFFECTIVENESS					
Control Model	-3.902***		0.0262	15.224***	
Main Effect Model	-3.133**	-3.629***	0.0485	14.360***	0.0223

* p < .10 ** p < 0.5 ***p < .01

DISCUSSION

Two sets of hypotheses constituted this study: interactive and systems fit. Interactive hypotheses evaluated the appropriateness of Perrow's (1967) contextual dimensions for partitioning technology transfer environments, and evaluated both the linear and symmetric, or monotonic, properties of the data. Organization theory provided justification for the dimensions of variety and analyzability to appropriately model technological environments (Daft and Macintosh, 1981; Withey, Daft and Cooper, 1983; Keller, 1994). Support for the interactive hypotheses would have reaffirmed their relevance in the present data, and demonstrated adherence to theoretical assumptions of linearity and symmetry (Schoonhoven, 1981). Unfortunately, the interactive hypotheses were only partially supported, thereby breaching the assumptions and casting reservation on the relevance of the contextual variables for this data.

This breach may have stemmed from methodological and cultural issues that, in the latter case, could have also influenced the system fit outcomes. Methodological issues related to distributions of the structural variables information amount and richness. Correlation analysis requires the use of normally distributed data. Both structural variables produced bi-modal distributions that could not be rectified by transformation and did not, therefore, conform to the requirements of normality. This was

an issue for concern in the interactive procedural stage and may have influenced the failure of the data to evidence linear or symmetric properties in the various technological contexts. Lacking the important prerequisite of normality, findings of the bi-variate interactive correlations would be rendered questionable at best. The distributive properties issue was less concerning in the systems fit procedures, as the relevant structural variables were used simply as integer values in the derivation of individual fit scores. While normal distribution of the fit variable was both important and achieved, restrictions on the structural variables were lifted in this second stage of analysis.

An additional issue concerned sample response bias stemming due to any psychological or behavioral phenomenon stemming from cultural aspects of the study (Churchill, 1991). This would be particularly true in measuring the information processing capabilities. Pervasive within 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 widespread in the data, might signify a systematic bias to potentially contaminate statistical findings.

The systems fit hypothesis predicted that projects achieving fit would enjoy superior performance. This notion reflected a theoretical core of the study, and was only weakly supported in this data. While the data confirmed support for the dependent variable productivity, it lacked significance in the case of either satisfaction or project effectiveness. The weak 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 then aggregated to eight-week mean values then deployed 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. Interesting to note is that the only dependent variable yielding favorable results was productivity, which was measured at the same individual level as the independent variable fit. An additional limitation mentioned previously was the author's inability to objectively corroborate the dependent measures.

Longitudinal factors could also have hindered the systems fit analysis. Productivity was reported weekly, constituting a finer-grained criterion that reflected a respondent's work effectiveness longitudinally. Since satisfaction and project effectiveness were reported cross-sectionally at termination of the eight weeks, they could be distorted by random influences operating late in the period. Although the corresponding scale items specifically addressed 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. These longitudinal issues may have threatened integrity of the dependent variables. The fact that the dependent variable productivity was measured weekly, and was the only association to be supported in this data, lends additional evidence that there was a longitudinal problem to be considered.

IMPLICATIONS

This study adds both to the bodies of systems contingency theory and knowledge management research. Despite any shortcomings of the findings, it extends contemporary perspectives of knowledge management to incorporate earlier views of organizational contingency theory. The notions of tacit and codified knowledge are extensively discussed within current portrayals of knowledge management and organizational learning (Edmundson, et al, 2003, Li & Gao, 2003, Zack, 1999; Nonanka & Takeuchi, 1995). Popular interpretations of organizational learning view codified knowledge as that which is transmittable in formal, symbolic language, whereas tacit knowledge is difficult to articulate and must be acquired through experience or similarly implicit understanding (Polanyi, 1966). We argue that variety and analyzability reflect environments of either codified or tacit knowledge and that any knowledge event will contain varying degrees of both attributes. We argue further that such knowledge events set the stage for a contingency condition requiring appropriate structural responses to effectively transfer the knowledge to its appropriate users. Traditional contingency theory yields information amount and richness as suitable structural responses for the processing of codified and tacit knowledge. From this viewpoint, structural contingency theory offers an interesting and theoretically compelling approach for understanding the transfer of knowledge and technology in organizations. We believe that further application of this model within different methodological settings may add significant benefit to the understanding of organizational knowledge transfer and its structural implications for performance.

Conclusions offered within the previous section suggest that the research sample may have been biased by its translation and application within the Japanese culture. However, as discussed by Nonaka & Takeuchi (1995), the culture was rich in its tradition of technology and knowledge transfer because of the dynamic management of interfaces between tacit and codified (or explicit) knowledge. Additional research has documented a Japanese institutionalization of knowledge transfer characterized by rapid product and process development, market globalization, and the pervasive creation and exploitation of knowledge (Abegglen & Stalk, 1985; Mansfield, 1988; Clark & Fujimoto, 1989; Westney, 1993. Any cultural bias attributed to the use of survey research should not dampen a quest to better understand knowledge management in Japanese organizations. Objective questionnaires are not a traditional mode of organizational research in Japan; less intrusive methodologies are more common vehicles of inquiry (Kodama, 1995). Therefore future research of Japanese knowledge transfer, while important and certainly culturally relevant, might be more operationally sound within

a more subjective methodology such as grounded case studies. The information processing framework tested within the present research would lend itself well to such an approach.

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ADAPTING PROJECT MANAGEMENT PROCESSES TO THE MANAGEMENT OF SPECIAL EVENTS: AN EXPLORATORY STUDY

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ABSTRACT

The number, size and complexity of what are called "special even." haves increased significantly over the last three decades. Examples of special events include: civic events, meetings and conferences, expositions, fairs and festivals, and hallmark events such as the Olympic Games, sporting events, and a variety of other similar activities (Goldblatt, 2003). Sporadic reports indicate that Project management processes are increasingly being used to implement such special events. This paper explores event literature on this phenomenon and comments on how, from both a project management and an event management perspective, the project management process can facilitate a more effective and professional management of special events.

Over the last 25 years project management has seen the development of a defined body of knowledge, formalized management processes, and institutionalized professionalism designed to improve the management of timed events or projects. It would appear logical that current project management processes and procedures might be well adapted to increasing professionalism in managing special events. In the project management field, the Guide to the Project Management Body of Knowledge (PMI PMBOK Guide, 2000) defines a project as"…a temporary endeavor undertaken to create a unique product or service." The term "special events," as employed by event managers clearly fits this definition.

Through a literature review the paper demonstrates the ability of the project management processes and body of knowledge to provide a modified management structure to theevent management field. Project management as a process for change management, the iterative nature of the project management process, and the processes designed to meet deadlines are discussed to demonstrate how they can be adapted to increase professionalism in the management of events.

INTRODUCTION

In the past decade special events have increased extensively in number, size and complexity. As these events increase in size and complexity they need ever increasing planning and management

efforts. The larger numbers of people (it is not uncommon for a professional conference in the USA to attract more than 5,000 attendees for periods ranging from 3 days to 7 days (PMI Seminar and Symposium, San Antonio, 2002). Within such events are multiple presentations occurring simultaneously as well as workshops and exhibitions. These large events demand more sophisticated crowd and traffic control, while their increased complexity, including such things as half time entertainment, requires a much detailed control of the schedule. Smaller events held by local government, charity and private organizations have proliferated in the past decade spawning many organizations that specialize in planning and organizing special events.

Summer and Winter Olympic Games are now huge events involving thousands of athletes and volunteers, and hundreds of venues. In 2002, the Winter Olympics in Salt Lake City was broken down into some 37,000 tasks and used a project management software package to schedule and integrate these individual tasks. The organizers of these events recognized that they could not achieve the necessary integration without the use of at least project management software packages, and in some cases the complete range of project management tools and techniques (Bittern, 1992, Eager, 1997, Foti, 2004).

To manage the proliferation of large special events and the many smaller events occurring at the local level, a new discipline has developed known as "Event Management". In the past, those who managed such events could consider their jobs "more of a folk craft than a profession" (O'Toole, 2000, 2). Today, however, there are textbooks, trade publications—both books and journals—community programs, and even university sponsored certificate and degree programs, and at least one certification examination sponsored by the International Special Events Society. However, if one reviews the texts it is obvious that there is still no overarching process drawing all the different functions or activities of event management together.

As most accepted professions have had to do in the past, the event management discipline is moving toward developing a body of knowledge as one of the pre-requisites to being recognized as a profession. One of the advantages of living in this modern world is that no matter what is being attempted, something similar has probably been accomplished earlier. That model can then be adapted to meet the needs of other groups. This paper discusses the development of a unique body of knowledge for the events management field, as well as the need for an overarching process to guide its development. The project management body of knowledge provides a model that will allow event management to develop quickly as a profession.

PROFESSIONALISM AND THE BODY OF KNOWLEDGE

What distinguishes a profession, and how does a group of practitioners become a profession? In the past, professional status has been achieved by practitioners assuring the public and government that they would manage, monitor and control the activities of practitioners through a

set of self-regulating standards (Zwerman et. al., 2002). In part, recognition as a profession relies on the existence of characteristics that have been identified as defining accepted professions. These have been identified as: a set of standards for entry into the profession, an enforced ethics policy, a professional service motive, a sanctioning organization, and a specialized body of knowledge unique to the profession (Adams et al., 1983; Zwerman et. al., 2002). While arguments continue within different organizations about the validity of these five characteristics, it is generally accepted that as a minimum a profession must have a recognized specialized body of knowledge associated with it.

The definition of a specialized body of knowledge is, in a sense, the first step in any field's efforts to develop professional status. It is the basis around which educational programs, certification programs, and standards for both entry and performance can be established. Professions generally document the body of knowledge that applies to their specialized field, track the development of this knowledge within their field, and periodically update both the knowledge base and "best practices" for using that knowledge base within their field. Portions of the knowledge base can be, and frequently are, shared with other professions, but the specialized mix of knowledge appropriate to the specified field is likely to be unique to that field and lead to the unique standards and "best practices" that characterize that field. Educational programs should teach the defined body of knowledge. Certification programs should test an individual's knowledge of that unique body of knowledge. Standards for entry to the profession should evaluate the individual's unique understanding of the body of knowledge, and standards for practice of the profession should specify safe and appropriate practices for implementing that knowledge within the profession. It is indeed difficult to see how any field could be considered a profession without having defined, nurtured and developed its own unique body of knowledge.

TOWARD A SPECIAL EVENTS BODY OF KNOWLEDGE

As is suggested by O'Toole (2003) there are many event management books that "describe how to get an event together…" but that many "confuse the event with the management" of the event. That is, the event is the product that is produced by event management. This product will be different for every event, but the management procedures to accomplish that event should be largely consistent across events, and should therefore provide the basis of a body of knowledge for event management. A short literature review conducted by the authors confirms O'Toole's assertion. Six event management books were reviewed to determine if there was any over-riding process being discussed in the event management literature (Nadler et al, 1987, Allen, 2000, Dove et al, 2001, Armstrong, 2001, Goldblatt, 2002, and Wendroff, 2004). Table 1 summarizes the results of this review, providing a chapter by chapter breakdown of the materials covered within the book. For convenience purposes, these chapters were organized according to the sequence of processes

that occur within any project, as specified by the Project Management Institute in its *Guide to the Project Management Body of Knowledge*. This organization is discussed later in the paper (see Table 1).

Only two of the books, Armstrong (2001), and Goldblatt (2002) discuss "phases" and "stages" of a special event. Armstrong identifies a planning phase, a tactical and deadline phase, an enjoyment phase, and an afterglow phase. Goldblatt discusses research, design, planning, coordination, and evaluation stages or phases of event management. Among the six books reviewed, there was no general consensus concerning the sequence of stages or phases that would be appropriate for successfully managing a special event.

Recently, two authors in the event management field (Silvers, 2003; O'Toole, 2003), have put forward suggestions for a body of knowledge for event management, and have developed processes and knowledge areas for an event management body of knowledge. Silvers (2003), has proposed a knowledge domain structure, depicted in Figure 1, which "represents a simple mapping of concepts." While admitting that many of the functional units and topics represented in the structure can be separate disciplines or specializations within their own right, the author proposes that the structure is used to illustrate "the scope and complexity of this profession…" (Silvers, 2003, 8).

Table 1. Comparison of Chapter Headings with PMI Process Groups

Reference	Initiating
Nadler, et. al. 1987	Ch 1. The Changing Conference and Meeting Scene
Allen, 2000	Ch 1. The First Steps: Initial Planning and Budgeting
Dove, et. al. 2001	Introduction: Defining the Annual Campaign.
Armstrong, 2001	Ch 1. The Four Phases of Event Planning; Ch 3. Learning from Past Performance; Ch 4. Needs Assessment; Ch 6. Selecting the Right Event
Goldblatt, 2002	Ch 2. Models of Global Event Management.
Wendoff, 2004	Ch 2. Choosing the Event
	Planning
Nadler, et. al. 1987	Ch 2. Designing the Conference; Ch 3. Four Useful Designs; Ch 4. Handling Related Events and Activities; Ch 5. Site Selection; Ch 6. Meeting and Function Rooms; Ch 7. Presenters and Speakers; Ch 8. Use of Audiovisuals; Ch 9. Food and Beverage Functions; Ch 10. Coordinating Exhibitions; Ch 11. Planning for Companions; Ch 12. Effective Marketing; Ch 13. Public Relations; Ch 14. Transportation Issues; Ch 15. Entertainment Possibilities; Ch 16. Developing a Budget; Ch 17. The Registration Process; Ch 18. Preparing a Participant Program Book; Ch 21. Resources for Conference and Meeting Planners.

Table 1. Comparison of Chapter Headings with PMI Process Groups	
Allen, 2000	Ch 1. Initial Planning and Budgeting; Ch 2. Organization and Timing; Ch 3. Location, Location, Location; Ch 4. Transportation; Ch 5. Guest Arrival; Ch 6. Venue Requirements; Ch 7. Who's it all For?; Ch 8. Food and Beverage; Ch 9. Other Considerations.
Dove, et. al. 2001	Ch 1. Developing an Annual Giving Plan; Ch 2. Segmenting Appeals; Ch 3. Testing & Statistical Analysis; Ch 5. Sponsoring Special Events; Ch 8. Key Program Roles and Responsibilities; Ch 9. Working with Volunteers.
Armstrong, 2001	Ch 1. The Four Phases of Event Planning; Ch 2. Designing Your Special Event Timeline; Ch 3. Learning from Your Organization's Past Performance; Ch 5. Planning and Managing to Achieve Your Goals; Ch 7. Creating Your Budget; Ch 8. Building Effective Teams; Ch 10. Constructing and Managing Your Marketing and Communications Plan; Ch 11. Creating Compelling Promotional Materials; Ch 13. Managing the Details; Ch 14. Handling Surprises and Contingencies.
Goldblatt, 2002	Ch 3. Developing and Implementing the Event Plan; Ch 4. Management of Human Resources and Time; Ch 5. Financial administration; Ch 9. Accommodating Special Needs; Ch 10. Advertising, Public Relations, Promotions, and Sponsorships; Ch 12. Risk Management: Legal and Financial Safeguards.
Wendoff, 2004	Ch 1. The Master Event Timetable; Ch 3. Monetary Goals and Budgets; Ch 4. Recruiting Volunteer Leadership for your Event; Ch 5. Networking the Community; Ch 6. Plan an Event Online; Ch 7. Marketing; Ch 8. Special Event Administration.
	Implementation
Nadler, et. al. 1987	Ch 4. Handling Related Events and Activities; Ch 5. Site Selection; Ch 9. Food and Beverage Functions; Ch 10. Coordinating Exhibitions; Ch 12. Effective Marketing; Ch 13. Public Relations; Ch 14. Transportation Issues; Ch 15. Entertainment Possibilities; Ch 16. Developing a Budget; Ch 17. The Registration Process; Ch 20. Conducting the Conference; Ch 21. Resources for Conference and Meeting Planners.
Allen, 2000	No Chapters.
Dove, et. al. 2001	Ch 4. Implementing a Direct Mail Campaign; Ch 5. Sponsoring Special Events; Ch 6. Telemarketing Your Cause; Ch 7. Soliciting Funds in Person; Ch 8. Key Program Roles and Responsibilities; Ch 9. Working with Volunteers; Ch 10. Promotions, Communications, and Marketing; Ch 11. Gift Administration and Donor Appreciation.
Armstrong, 2001	Ch 8. Building Effective Teams; Ch 10. Constructing and Managing Your Marketing and Communications Plan; Ch 13. Managing the Details; Ch 14. Handling Surprises and Contingencies.
Goldblatt, 2002	Ch 3. Developing and Implementing the Event Plan; Ch 4. Management of Human Resources and Time; Ch 5. Financial administration; Ch 6. Event Leadership; Ch 7. Managing Vendor Contracts; Ch 8. On-site management; Ch 10. Advertising, Public Relations, Promotions, and Sponsorships; Ch 11. Online Marketing; Ch 12. Risk Management: Legal and Financial Safeguards.

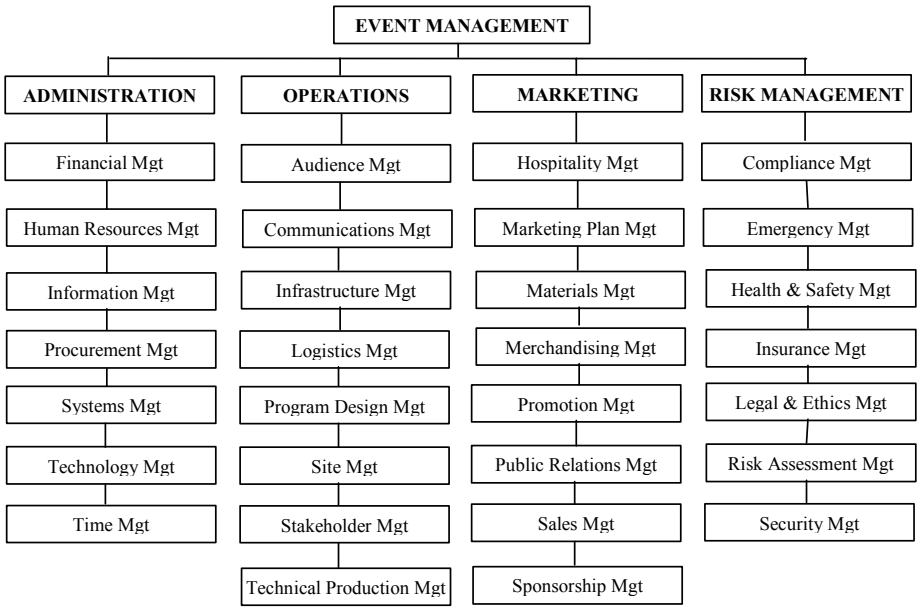
Table 1. Comparison of Chapter Headings with PMI Process Groups	
Wendoff, 2004	Ch 1. The Master Event Timetable; Ch 3. Monetary Goals and Budgets; Ch 4. Recruiting Volunteer Leadership for your Event; Ch 5. Networking the Community; Ch 7. Marketing; Ch 8. Special Event Administration; Ch 9. The Final Weeks to Event Day; Ch 10. The Big Day: Why Success is in the Details.
	Control
Nadler, et. al. 1987	Ch 9. Food and Beverage Functions; Ch 12. Effective Marketing; Ch 16. Developing a Budget; Ch 17. The Registration Process; Ch 19. Evaluation and Follow-up; Ch 21. Resources for Conference and Meeting Planners.
Allen, 2000	No Chapters.
Dove, et. al. 2001	Ch 3. Testing & Statistical Analysis; Ch 10. Promotions, Communications, and Marketing; Ch 11. Gift Administration and Donor Appreciation.
Armstrong, 2001	Ch 9. Revising the Timeline to Stay on Track; Ch 12. Managing the Necessary Paperwork; Ch 14. Handling Surprises and Contingencies; Ch 15. Thanking, Acknowledging, and Reporting.
Goldblatt, 2002	Ch 5. Financial administration; Ch 7. Managing Vendor Contracts; Ch 8. On-site management; Ch 12. Risk Management: Legal and Financial Safeguards.
Wendoff, 2004	Ch 1. The Master Event Timetable; Ch 3. Monetary Goals and Budgets; Ch 8. Special Event Administration; Ch 9. The Final Weeks to Event Day; Ch 10. The Big Day.
	Closing
Nadler, et. al. 1987	Ch 19. Evaluation and Follow-up.
Allen, 2000	Conclusion – It's a Wrap, Your next Event.
Dove, et. al. 2001	Ch 12. Closing the Campaign and Moving Forward.
Armstrong, 2001	Ch 15. Thanking, Acknowledging, and Reporting; Conclusion: Applying Your Experience.
Goldblatt, 2002	No Chapters
Wendoff, 2004	Ch 11. Thank You and Goodbye!

The domain structure proposes four knowledge domains (administration, operations, marketing and, risk management.) Within these domains are thirty functional units. Within each functional unit is a list of topics. The topics relate to very specific actions or items that may need to be carried out during an event and could be more accurately described as a check list. From the project management point of view this list would be used during the planning phase of a project to determine which topics needed to be included in the schedule.

The domain structure proposed by Silver represents a starting point for discussion of the event management body of knowledge. It demonstrates no interdependencies or interactions of the various knowledge domains, functional units or topics. Many of the functional and topic areas are actually activities of an event, not a description or process that could be applied to an event

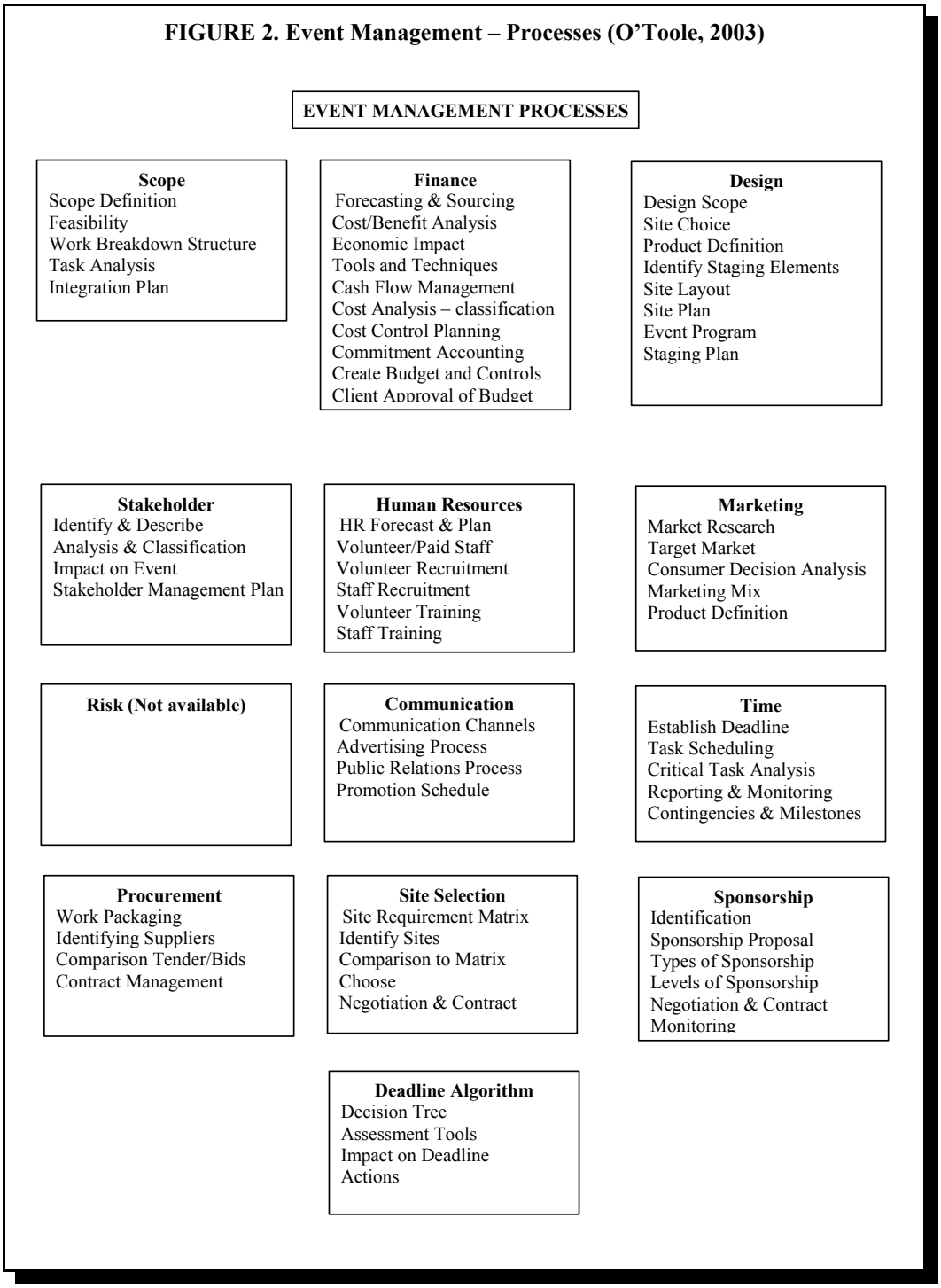
management. Finally, many of the topics are, in fact, separate specializations or disciplines, including for example, hospitality management and logistics management. While this may be a good starting point, the domain structure proposed would need extensive development before it could be identified as resembling a body of knowledge for event management. Of course, developing a body of knowledge was not Silver's intent. However, used in conjunction with the project management body of knowledge it could be used to define more clearly the processes of managing an event.

FIGURE 1
Event Management Body of Knowledge Domain Structure (Silvers, 2003, 3)



Meanwhile, O'Toole (2003), taking a major step beyond Silvers, has proposed process maps for 13 event management processes. Summaries of these processes are presented in Figure 2. Each of the 13 special event processes has been broken down into component processes and O'Toole provides flow maps for each of the 13 processes, but these are only loosely connected with each other. There is still no overarching model that links all of these 13 processes together to provide a more general presentation of an overall events management process.

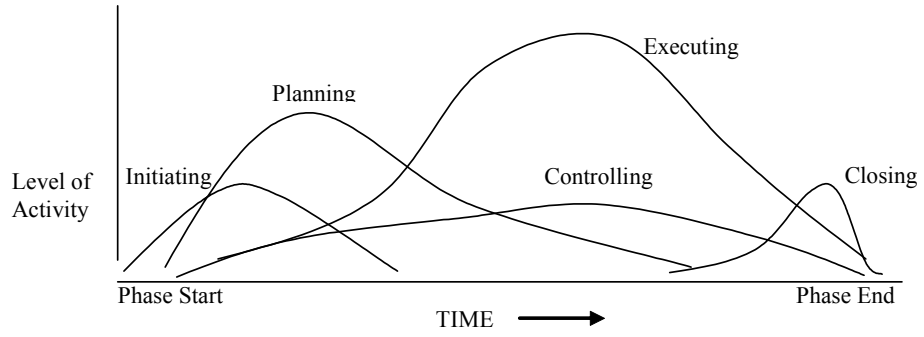
FIGURE 2. Event Management – Processes (O'Toole, 2003)



A PROJECT MANAGEMENT BODY OF KNOWLEDGE

A process is a course of action, procedure or method which, when applied to a series of management activities, will help rationalize and compartmentalize those activities in a systematic way. In the Project Management Institute's Guide to the Project Management Body of Knowledge (2000 edition), a "process" is defined as "a series of actions bringing about a result" (PMBOK 2000. 29). The PMBOK defines five process groups which loosely relate to a generic project life cycle. They are: an initiation process which authorizes the project or plan, a planning process that defines and refines objectives which allows the best of alternative courses of action to be attained, an executing process involves carrying out the plan using the resources allocated, a controlling process which monitors and measures project progress regularly to ensure appropriate corrective action can be taken when necessary, and a closing process which involves a formal acceptance of project completion and the termination of any contracts (PMBOK, 2000). Figures 3 and 4 demonstrate that while sequential in concept, some of these process groups overlap and involve iteration.

FIGURE 3 – Overlap of Process Groups (PMBOK, 2000, 31)

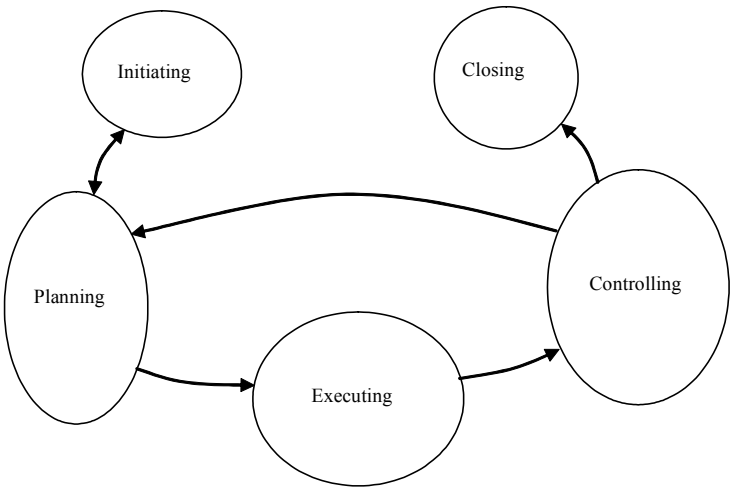


The PMBOK thus describes a process which is divided into two major categories – a project management process that describes, organizes, and completes the work of the project, and a product oriented process that specifies and creates the project's product (PMBOK, 2000, 30).

The project management process described above applies to all projects across all industries. Because special events fall within the PMBOK definition of a project, that is, "a project is a temporary endeavor to create a unique product or service" (PMBOK, 2000, 4), then this "project management process," with industry specific modification, should be applicable to special events as well. (Note that a special event is a "temporary endeavor to create a unique product or service.")

It would therefore appear that both the project life cycle and the project process groups should apply to special events as well as they apply to any other project.

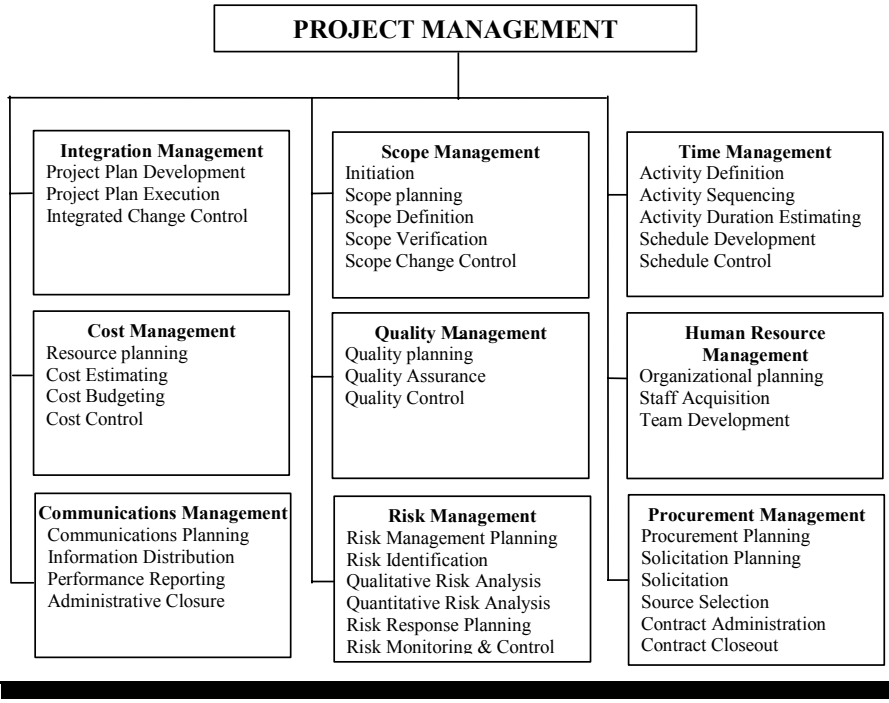
Figure 4
Five Process Groups Iterative Model (Adams and Caldentey, 2004)



The five basic process groups described above are broken down into Knowledge Areas, and these Knowledge Areas are broken down into processes. At the time of this writing, there are a total of thirty-nine processes in nine knowledge areas. This is up from six knowledge areas when the PMBOK was first published in the early 1980's. The history of the PMBOK indicates that the defined "bodies of knowledge" tend to increase in number and become much more complex as time passes and the knowledge base for the profession matures (see Figure 5).

The project management processes are linked by their inputs (items that will be acted upon), tools and techniques (mechanisms used to create outputs from inputs), and outputs (items that are a result of the process). The PMBOK is very clear, when defining these processes and their interactions, that these processes must "meet the test of general acceptance." That is, "they apply to most projects most of the time" (PMBOK, 2000, 37). To further emphasize this, the PMBOK defines two categories of processes, Core Processes and Facilitating Processes. Core processes "have clear dependencies that require them to be performed in essentially the same order on most projects" (PMBOK, 2000, 33), and Facilitating Processes that "are more dependant on the nature of the project" (PMBOK, 2000, 34). In total, the five process groups, the nine knowledge areas, and the thirty-nine project management processes can be presented as shown below. Note that the interactions and interdependencies included in the PMBOK have not been presented here.

FIGURE 5: Project Management Knowledge Areas and Project Management Processes (from PMBOK, 2000).



INITIATION PROCESS GROUP

Core Processes

- Scope – Initiation

Planning Process Group

Core Processes

- Scope – Scope Planning, Scope Definition
- Time – Activity Definition, Activity Sequencing, Activity Duration Estimating, Schedule Development
- Cost – Resource planning, Cost Estimating, Cost Budgeting
- Integration – Project Plan Development
- Risk – Risk Management Planning

Facilitating Processes

- Quality – Quality planning
- Communication – Communication Planning
- Human Resources – Organizational planning, Staff Acquisition

- Procurement – Procurement Planning, Solicitation planning
- Risk – Risk Identification, Qualitative Risk analysis, Quantitative Risk analysis, Risk Response planning

Executing Process Group

Core Processes

- Integration – Project plan Execution

Facilitating Processes

- Quality – Quality Assurance
- Communication – Information Distribution
- Human Resources – Team Development
- Procurement – Solicitation, Source Selection, Contract Administration

Controlling Process Group

Core Processes

- Communications – Performance Reporting
- Integration – Integrated Change Control

Facilitating Processes

- Scope – Scope Verification, Scope Change Control
- Time – Schedule Control
- Cost – Cost Control
- Quality – Quality Control
- Risk – Risk Monitoring and Control

Closing Process Group

Core Processes

- Communication – Administrative Closure
- Procurement – Contract Closeout

DISCUSSION

The PMI Guide to the Project Management Body of Knowledge was originally developed in the early 1980's and has gone through at least three major revisions and updates since that time. Membership in the institute has grown from approximately 4000 members in 1980 to approximately 130,000 members today. Developing the field of project management into a profession with a specialized body of knowledge that permitted effective education and certification programs has been credited with the vast majority of this growth. With project management rapidly being

recognized as an emerging profession, the project management body of knowledge provides a useful model against which to compare the two proposals that have been published leading toward a special events management body of knowledge. Such a comparison may well identify strengths, weaknesses and possibilities for the events management field.

Referring to Figure 1, Silvers domain structure proposal contains four knowledge domains (administration, operations, marketing and risk management) that roughly equate within the knowledge areas of the project management body of knowledge. Some of the 30 functional units within these domains can be equated to project management knowledge areas. For example, human resource management, communications management and time management are included among these domains and are also specific knowledge areas within the PMBOK. Others of the functional units can be related to identified project management processes for example, risk assessment and information management are both processes within the project management body of knowledge. Within each of the functional units is a list of topics that relate to very specific actions or items that may need to be carried out within the special event, and these could be more accurately described as a checklist. From the project management point of view, this checklist could be used during the planning phase of a project to determine which items needed to be included and scheduled. These topics do not relate to any of the project management processes described above.

The domain structure represents a starting point for the discussion of the special event body of knowledge. It demonstrates no interdependencies or interactions of the various knowledge domains, functional units or topics. Many of the functional units and topic areas are actually activities of the special event, not a description or process that could be applied to the management of the event. Finally, many of the topics are in fact separate specializations or disciplines such as the hospitality management and logistics management topics. While it provides a good starting point, the domain structure simply does not present the global, overarching model or process that would provide guidance for developing required knowledge areas within the special events field. However, used in conjunction with the project management body of knowledge, it could be used to define at least an initial view of the processes needed to manage special events.

O'Toole's 13 special event management processes shown in Figure 2 generally equate to the project management knowledge areas each of these event processes have been broken into component processes that represent a mix of project management and event management processes. O'Toole broadly links inputs and outputs for each process. For example, the inputs to financial management are identified as scope, stakeholder, and marketing, while the outputs are identified as the change control process and the deadline algorithm or process. The later two outputs are common for all 13 of the event management processes.

When comparing the special event management processes with the PMBOK processes, many similarities can be found. For instance, six of the 13 processes are the same as the project management knowledge areas—scope, time, human resources, communications, risk, and procurement. The other seven event management processes—finance, design, stakeholder,

marketing, site choice, sponsorship, and deadline are not identical to PMBOK knowledge areas however, many of these seven items can be found within the existing PMBOK processes. For example, stakeholder analysis is found within the project management area of scope. The special event financial management process is clearly related to the project management cost process. Design, marketing, site choice and sponsorship would fit within similar categories of the project management process groups. They are activities that form part of the special events project, but would have to be contained within the project plan, project communications, project risk and project control processes as defined by the project management profession.

Similarly, most of the sub-processes within the 13 special event management processes can be better described in project management terminology as project activities or project tools and techniques. An example of project activities can be seen within the special event design activities where site-choice, and site layout form part of the event design process. These would typically be included in the project planning and process groups. Within the project management literature, tools and techniques form part identify what is necessary to carry out the core and facilitating processes within the overall project management process. They are not included as separate process items. As another example, a review of the special event financial management processes shows cost/benefit analysis, cash flow management and economic impact listed as processes, items which are clearly specified as tools within the project management literature.

Finally, the deadline process or algorithm identified by O'Toole appears to have been developed due to his concern for the "overriding constraint of the deadline" in the event management field (O'Toole 2000, 7). Many projects outside the special events industry are not completed within their initial time estimates. In special events management, however, slipping the completion date for an event is not an acceptable option. Within the project management field, this simply means that money and resources must be used as necessary to ensure that the event occurs on time. This is no different than any other project except that in many projects the trade off between time and money is more flexible. This allows decisions to be made which lower costs by extending the deadlines in these projects. Such options would not normally be available in the event management industry.

While a major improvement over Silvers' domain model, O'Toole's event management process model still does not provide the overarching group processes and their relationships to one another that are required to bring the event management body of knowledge together into a single integrated philosophy for approaching the management of events.

CONCLUSION

The process of becoming a profession is a difficult one, and the point at which the field gains professional status is difficult to define. The old measure of self-regulation that medicine,

architecture, the practice of law used is no longer relevant in a society where knowledge is increasing exponentially. The increasing complexity of our society today requires increasing fragmentation in the workplace, fragmentation which produces specialization and disciplines which not only did not exist fifty years ago, many of them could not have been thought of fifty years ago. Yet after thirty-five years of continuing development, project managers still argue over whether or not they have achieved the status of a profession (Zwerman, 2002).

This paper has reviewed several books and two proposals that appear to be leading an effort to develop a unique body of knowledge for the special event management industry. The project management field faced a similar problem in the late 1970's, but in that case, it was the project management institute that undertook the task of developing the body of the knowledge, not single individuals. It can be seen from this review that the special events industry does have some unique aspects to it, the primary example being its absolute deadline requirement imposed by the nature of the product it provides. However, it is also clearly evident that special events clearly fit within the project management definition of a project. Certainly special events form an industry specific group of projects, but they are still projects and function as projects. No unique overarching process has been developed for special events management. It would be difficult to develop one that would provide a unique body of knowledge because if the special event is in fact a project, then any process that would adequately define the events management would fit within the project management processes, and therefore would not be unique. Further, the attempts that have been made toward an events management body of knowledge have drawn heavily from the Project Management Body of Knowledge. It seems the event industry would be best served by remaining a highly specialized industry with its own standards and certification processes that document this role, by adapting the Project Management Body of Knowledge and the PMBOK processes to best suit its own needs.

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