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LETTER FROM THE EDITOR

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Articles

EDWARDS DEMING, MARY P. FOLLETT AND FREDERICK W. TAYLOR: RECONCILIATION OF DIFFERENCES IN ORGANIZATIONAL AND STRATEGIC LEADERSHIP

Lonnie D. Phelps, McNeese State University
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ABSTRACT

Much has been written and researched about Deming's 'total quality management' (TQM), Follett's 'law of situation', and Taylor's 'scientific management'. Yet, these management scholars differ in their organizational and strategic leadership abilities and practices and remained in three different corners of a triangle. Though the differences in their thinking may be attributed to the changing nature of management as a discipline over a period of time and consequent changes in the fractionalized corporate ownership, there are some interesting commonalities found in their approaches. The purpose of this paper is to highlight some of the commonalities between total quality and scientific management, and explain how Follett's law of situation bridges the gap between these seemingly different approaches. The commonalities found in Taylor, Follett and Deming provide enduring lessons for the practitioners and academicians, and enrich the organizational and strategic leadership literature.

INTRODUCTION

A review of the scientific management theory of Taylor, total quality management perspective of Deming, and systems thinking of Follett gives an impression that these scholars differ dramatically in their approaches apples to oranges (and grapes). However, by turning to the original works of Taylor, Deming and Follett (rather than others' interpretations) one may opine that Taylor's ideas have reemerged in the form of Deming's quality management and Follett's systems thinking paved a bridge between these perceived polar theories. This paper is divided into four sections. The first section gives a brief description of Deming's total quality management (TQM); the second compares the scientific management principles of Taylor with TQM; and the third section compares Follett's theory with Deming's. In the final section we synthesize these approaches, contrary to the conventional wisdom, and conclude that these theories have more in common than it would seem.

DEMING'S TOTAL QUALITY MANAGEMENT

Deming, with a doctorate in mathematical physics from Yale and a nomination for the Nobel Prize in 1992, was an extraordinary and remarkable individual. In fact, Deming was an institution in himself (he passed away in December 1993 at the age of 93 years), and an astute businessman who brought Japan back from the ashes of the World War II. In his time, Deming was the most powerful management consultant anywhere in the world, and a friend-consultant-advisor who made the Japanese post-second world war miracle possible (Stupak, 1999). Unsurprisingly, the emphasis on 'quality' placed the Japanese companies on the Fortune list. Having acted as a savior of Japan for three decades, Deming was invited by US business houses to make recommendations for retaining competitive strength and ensuring corporate survival. Deming pointed out seven deadly sins that plagued American businesses and suggested fourteen remedies in his outstanding book, "Out of Crisis", published in 1986. By the 1990's, American companies unquestionably started implementing the magic 'quality pill' as advocated by Deming in order to come 'out of crisis'. The deadly sins and Deming's 14 points are summarized in Table 1.

Table 1: Deadly diseases and prescriptions by Deming	
Diseases that plagued the companies in the Western world (Deming, 1986: pp 96-97)	The prescriptions advocated by Deming (Deming, 1986: pp 23-24)
<ol style="list-style-type: none"> 1. Lack of constancy of purpose 2. Emphasis on short-run profits 3. Evaluation by performance, merit rating and annual review of performance 4. Mobility of management 5. Running company on visible figures alone 6. Excessive medical costs for employee health care, which increase the final cost of goods and services 7. Excessive cost of warranty, fueled by lawyers who work on the basis of contingency fees 	<ol style="list-style-type: none"> 1. Create constancy of purpose for improvement of product and service 2. Adopt the new philosophy 3. Create dependence on mass inspection 4. End the practice of awarding the business on the price tag alone 5. Improve constantly and forever the system of production and service 6. Institute training 7. Institute leadership 8. Drive out fear 9. Breakdown barriers between staff areas 10. Eliminate slogans, exhortations and targets for workforce 11. Eliminate numerical quotas 12. Remove barriers to pride of workmanship 13. Institute a rigorous program of education and training 14. Take action to accomplish the transformation

Several scholars have documented the importance of Deming's legacy in the development of what is commonly known as Total Quality Management (TQM), although Deming himself never

used the term TQM (Vinzant & Vinzant, 1999). According to Deming, “Western style of management must change to halt the decline of Western industry, and to turn it upward. There must be awakening to the crisis, followed by action—management’s job. The transformation can only be accomplished by man, not by hardware (computers, gadgets, automation, and new machinery). A company cannot buy its way into quality” (Deming, 1986: 18). Deming suggested a total transformation through four major themes, which refers to the system of ‘profound knowledge’. The themes are:

- a. appreciation of the system (i.e. interdependence of all the organizational units that work to accomplish the goals in an organization)
- b. knowledge of variation (i.e. understanding what variables can reveal about the capabilities of the system)
- c. understanding of the theory of knowledge
- d. psychology (i.e. intrinsic motivation)

Deming’s theory of knowledge is derived from the work of Lewis (1929), who taught that knowledge is built on theory, observation of the past, and predictions about future outcomes. Deming contends that rational prediction requires theory and builds knowledge through systematic revision based on the comparison of actual outcome with the predicted one. Deming asserts that “information, no matter how complete and speedy, is not knowledge. Knowledge has temporal speed. Without theory, there is no way to use the information that comes to us on the instant” (Deming, 1993: 104-105). In addition, Deming contends that the system of profound knowledge as outlined in the four major themes will enable managers to make the transformation necessary for survival and success in volatile economic climates.

At the time when Japanese companies were doing well, American businesses were showing downturn. The characteristics of American businesses during early 1980’s were: (a) short-term orientation, (b) declining R&D expenditures, (c) declining capital investment, (d) sluggish productivity growth over the period 1960-68 (USA was last out of the ten industrialized countries; Japan was first), (e) excessive concern with marketing and reliance on the power of the marketing effort to ‘shift produce’, (f) excessive promotion of people with finance and/or law background to the top management with a corresponding neglect of people with engineering background, (g) pseudo-professionalism, and (h) a preoccupation with mergers and acquisitions at the expense of product development (Haynes & Albernathy, 1980). Thus, American businesses experienced a market deterioration of competitive vigor and a growing unease about its overall economic well-being. Japanese companies earned success because they followed a simple formula, i.e. competing over the long run by offering superior products. As expected, Japanese companies were committed to compete in the global marketplace on technological grounds (Lawrence, 1996). Much credit goes to Deming who advocated that Japanese firms compete on the basis of quality of output, rather than

quantity. In retrospect, it may be safely inferred that some of the problems faced by American businesses could have been averted had they followed Deming's messages three decades earlier.

TAYLOR VERSUS DEMING

Taylor was interested in achieving efficiency in the production processes. He advocated scientific study of the work to determine a proper day's work, and called on management to implement the standardization of procedures to complete the work. He also suggested that management send a 'competent teacher to guide, help and encourage' (Taylor, 1911: 70) when workers repeatedly failed to do a task. Deming expressed the same content using the statistical control theory using different terminology. For example, what Taylor classifies as a 'proper day's work' is equivalent to 'process capability' in Deming's terminology. Furthermore, Taylor's suggestion of involving a competent teacher to help guide the failing worker is akin to taking necessary rectificational measures in Deming's terminology. When Taylor emphasized efficiency, Deming went one step further and suggested that quality is antecedent to efficiency. Deming's philosophy has its roots in statistical theory, which involves stochastic analysis of processes. Deming was interested in measurement and analysis of how variation can erode the quality of both products and processes. While Deming focuses on variation in the quality, Taylor's emphasis was on variation in the production by individual workers.

Taylor was discredited for his purely scientific approach and neglecting the human element partly because his messages were not interpreted in proper perspective. However, Taylor did emphasize the development of workers and expressed his concern for their welfare. For instance, according to Taylor, "The principal object of management should be to secure maximum prosperity for the employer, coupled with the maximum prosperity for each employee... maximum prosperity means not only higher wages than are usually received by men of his class, but, of more importance still it also means the development of each man to his state of maximum efficiency, so that he may be able to do, generally speaking, the highest grade of work for which his natural abilities fit him, and it further means giving him, when possible, this class of work to do" (Taylor, 1911: 9). Taylor was very emphatic about improving the system (through efficiency), which is the capstone of Deming's philosophy. Deming recommends constant improvement in the system to improve quality and productivity and thus decrease costs. Deming recommends Shewhart Cycle or PDCA (i.e. plan, do, check, and act) to ensure continued improvement in the system of production (Deming, 1986). As Deming suggests, "improvement of the process includes better allocation of human effort. It includes selection of people, their placement, their training, to give everyone, including production workers, a chance to advance their learning and to contribute to the best of their talents. It means removal of barriers to pride of workmanship both for production workers and for management and engineers" (Deming, 1986: 51).

Taylor and Deming offer the same perspectives with regard to the selection of workers. Taylor contends that management should “scientifically select and then train, teach, and develop the workman, whereas in the past he chose his own work and trained himself as best as he could” (Taylor, 1911: p.36). In the similar vein, Deming argues that “the aim of leadership should be to improve the performance of man and machine, to improve quality, to increase output, and simultaneously to bring pride of workmanship to people...; the aim of leadership is to help people do a better job with less effort” (Deming, 1986: p.249).

The similarities and differences between Taylor and Deming are captured in Table 2.

Table 2: Taylor vs Deming (Some points of similarities and differences)		
Viewpoint	Taylor’s Organizational and Strategic Leadership	Deming’s Organizational and Strategic Leadership
1. Control of business (Difference)	Established by staffing positions of responsibility and authority with professional managers trained in the theory of scientific management and systems analysis (Taylor, 1911: p.36)	Established by leadership and cooperation (Deming, 1986: p. 117)
2. Division and concurrency of work (Similarity)	Improvements occur because of management’s increasing division of work, and increasing concurrency i.e. different aspects of work being done at the same time, within a project or process (Taylor, 1911: p 37)	Improvements are primarily due to increasing division of work, and creativity, and to increasing concurrency, within a project or process, or among projects or processes (Deming, 1986: p 122)
3. Using systems (Similarity)	Develop systems to perform repetitive tasks (Taylor, 1911: p 135)	Develop systems to perform repetitive tasks (Deming, 1986: p 330)
4. Optimum systems (Difference)	The optimum system is created by proper formulation of the objectives of the system and evaluation of alternatives to meet those objectives. To create optimum system, adequate information is available (Taylor, 1911: p 137; Taylor, Shop Management, 1911: p 135)	The optimum system does not exist in organizations. Every system must be analyzed to understand natural behavior of the system and variation within it. Information for creating the optimum system is unknown and unknowable. (Deming, pp 336-338)
5. Finding of causes (Difference)	Upon proper installation of system, any failure to meet standards or stated objectives must come from outside the system. (Taylor, 1911: pp 15-16)	Even upon the installation of system, inconsistencies and contradictions might be apparent and periodical analysis is necessary to detect and isolate the built-in flaws in the system itself. (Deming, pp 306-311)

Table 2: Taylor vs Deming (Some points of similarities and differences)		
Viewpoint	Taylor's Organizational and Strategic Leadership	Deming's Organizational and Strategic Leadership
6. Role of Management (Difference)	Continuous monitoring of the status of system for deviations from the system objectives to see if proper selection, poor motivation, inadequate training, or inefficient supervision are the causes of deviation. (Taylor, 1911: p.152)	Create a secure environment free from fear so that the defects in the system can be identified and rectified. Secure environment offers support, reassurance and appreciation for workers. (Deming, pp 59-62)
7. Control (Difference)	Control is the goal and management is the most important. (Taylor, 1911 : p.9)	Control is the effect and everyone is important. (Deming, pp59)
8. Leadership (Difference)	Goal of leadership is to secure maximum efficiency in the system. Prescriptive method is recommended. (Taylor, 1911: p.10)	Goals of leadership are to help people, learning, set and reset the goals of the organization. The method is example. (Deming, p 249)
9. Cooperation (Difference)	Enforcement of goal is done by strict adherence to standards and offering threats if standards are not met. (Taylor, 1911: p26)	An effect of leadership is seen in making people feel secure. (Deming, p59)

FOLLETT AND DEMING

Mary Parker Follett (1868-1933) was a philosopher and political scientist. She was primarily interested in studying interactions between individuals and groups in society. She believed that individuals have the incredible potential to grow personally and also develop groups in which they operate. Follett viewed business as a social setting rather than purely an 'economic setting'. She argued for the substitution of democratic authority in place of Weberian bureaucratic authority and suggested networks of people involved in all stages of production process. She was, in this sense, way ahead of her time. Some of the major contributions of Follett include (a) the development of a relational concept of authority that relied on the 'law of situation'; (b) the importance of participatory decision making, and (c) the importance of group processes characterized by reciprocity and inter-penetration of conflicting ideas of individuals. These processes of reciprocal conditioning and evocation are central to Deming's notion of total quality management (Fry & Thomas, 1996).

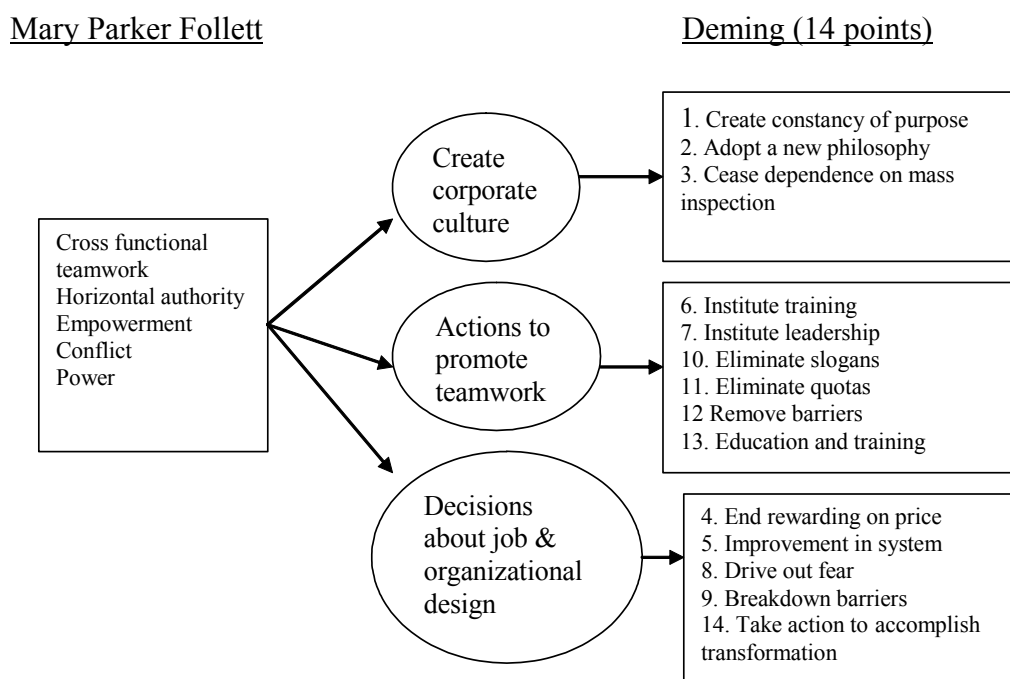
One of the hallmarks of Follett's philosophy is that an organization should keep abreast of its changing external environment and the features of its internal environment. Follett maintained that the coherence/fit between external environment and internal environment is the guideline for the success of an organization. She argued that coherence is created when collective action responds

to and anticipates both internal and external situational imperatives. Understanding of the view from each department and the perspective of each employee involved in a situation is fundamental in securing the benefits of the whole organization. The law of situation implies that all the organizational participants should be united in discovering and obeying specific situational laws (Eylon, 1998).

According to Follett, true power is ‘power with’ another, not ‘power over’ another. Until everyone within an organization realizes that they are bound together, each will see only their ‘own’ situation. In a contrast, ‘power with’ can come only from obedience to a single, ‘shared situation’. Follett called this ‘the law of situation’. The essence of this philosophy is that one person should not give orders to another person, but both should agree to take their orders from the situation. This gradually paved the way toward what is presently known as ‘empowerment’.

Follett’s contributions are linked with Deming’s 14 points through (a) creation of corporate culture, (b) promoting teamwork, and (c) organizational design (See Figure 1).

Figure 1: Mary Parker Follett & Deming: A comparison



Follett’s philosophy of teamwork can be seen in Deming’s language when he explains the need for consistency of effort. According to Deming, “suppose that (1) everybody knew what to do, (2) everybody did his best. Result: dissipation of knowledge and effort; results, far from optimum.

There is no substitute for teamwork and good leaders of teams to bring consistency of effort, along with knowledge” (1986: p 19).

Follett emphasized the importance of horizontal authority, empowerment, constructive conflict, and cross-functional teamwork in making business a social institution. Follett’s identification of the importance of horizontal authority is found in creation of cross-functional committees and conferences of parallel heads. As a departure from formal authority, Follett prescribed empowerment because she believed that power conferred always fails and reiterated that the most effective way to exercise authority is to depersonalize the giving of orders and emphasize the importance of task. Follett’s concept of mutual problem solving by participative management and employee involvement is insightful philosophical foundation to the conflict management. It is important to create organizational design to show the importance of reciprocal relationships, instead of focusing only on task. Creating corporate culture, actions to promote teamwork and decisions about organizational design are the means to achieve Follett’s principle messages.

Deming’s creation of constancy of purpose, ceasing dependence on mass inspection and adopting a new philosophy reflect creating the corporate culture as espoused by Follett. Further, Deming’s ways of promoting teamwork involve education and training the employees and removing barriers. Deming’s approach of changing structure involve improvement in the total system and driving the employees out of fear, and put an end to reward based on price alone.

FOLLETT’S PHILOSOPHY AS A BRIDGE BETWEEN TAYLOR’S SCIENTIFIC MANAGEMENT AND DEMING’S TOTAL QUALITY MANAGEMENT

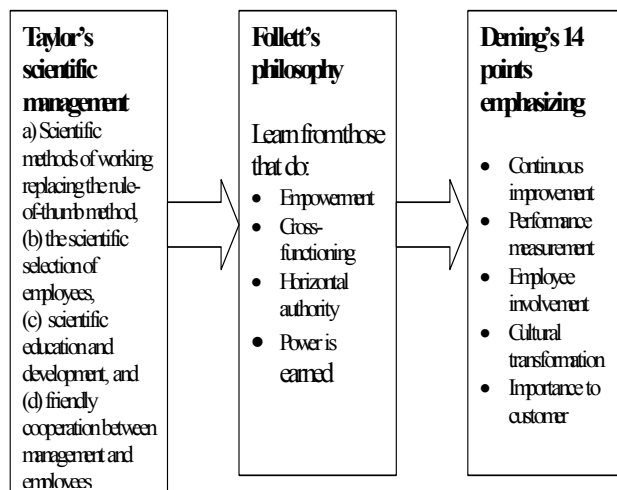
As the objective of this paper is to reconcile the seemingly contradictory theories and philosophies of three well known scholars in the field of management viz., Taylor, Follett and Deming, we attempt to provide Follett’s philosophy as the bridge between Taylor’s scientific management principles and Deming’s 14 points to bring the organizations out of crisis. (See Figure 2) on the following page.

MANAGERIAL PHILOSOPHY

Taylor’s managerial philosophy, as espoused in principles of scientific management, provide the basis for focusing on increased performance. Taylor was aware of the quality requirements and efficiency and insisted on (a) scientific methods of working replacing the rule-of-thumb method, (b) the scientific selection of employees, (c) scientific education and development, and (d) friendly cooperation between management and employees. Through these principles Taylor believed that employees would be able to share responsibility with the management and make the workplace a success. Further, Taylor advocated for the management to develop every branch of the business to

the ‘best’ state of excellence. Taylor, however, was criticized for advocating the ‘best’ way of doing things, since, critics argue, it is almost impossible to find the single ideal way of performing a task.

Figure 2: Mary Parker Follett—Bridging Management Thinking in the Deming’s TQM philosophy



Follett’s philosophy of management is understood from her innovative ideas of empowerment, cross-functional teamwork, horizontal communication, adaptive behavior, and the role of conflict in organizations in the development of entrepreneurial spirit. Moving away from the Taylorian concept of vertical authority, Follett believed that authority should be based on function rather than position, and that authority is exercised in reciprocally conditioned relationships dominated by an impersonal ‘law of the situation’ (Fry & Thomas, 1996). Follett emphasized participatory decision making so that employees would be able to contribute to the organization in a productive way. Further, instead of top-down authority, Follett emphasized bottom-up authority. She therefore advocated a totally new approach to management, which became forerunner of current management practices.

Deming’s philosophy of management is centered on core processes and quality of products and services. He emphasized total quality management in the sense that managers need to continuously monitor production process, give quality the top priority, and define quality standards precisely so that customers will be able to understand what the firm is producing. Deming also argued that management should involve everyone in the continuous improvement process.

Follett has systematically integrated the ideas of scientific management and human relations school of management and provided a bridge, which foretold the later writing of total quality

management guru, Deming (Graham, 1995). Follett, the pragmatic prophet, examined the effects and consequences of social processes in the efficiency-driven world of work (Snider, 2000). Follett also emphasized “the need to resolve conflict through *integrative unity* the advantage depending on the *law of the situation*” (Metcalf & Urwick, 1941: 59).

MANAGEMENT OF PEOPLE

Taylor’s scientific management emphasizes the best methods and tools so that employees will be able to achieve efficiency in output. He focused on preventing deliberate soldiering (i.e. under-working). In addition to second-class (lazy) workers, Taylor was concerned about “larger wastes of human effort, which go on everyday through blundering, ill-directed, or inefficient actions” (Taylor, 1911: 5). He therefore considered training and education as important parts of management of people at work.

Deming concurs with Taylor’s ideas and claims that the “greatest waste in America is the failure to use the abilities of people” (Deming, 1986: 52); thus, it is essential that management provide training to employees in order for workers to satisfy the customers. Taylor believed that management should scientifically select workers and then “train, teach and develop the workman” (Taylor, 1911: 36). Deming goes one step further and recommends that old workers should be in a position to provide training to new workers (Deming, 1986: 53). Taylor placed heavy emphasis on training of employees and equated it with the ‘training of a surgeon’ (Taylor, 1911: 126).

Follett’s bridge with regard to training the employees can be seen in her advocacy of empowerment. Follett recommends that workers in a social setting should share and develop individual skills through effective cooperation with other people. She also contended that the real service of business is to develop individuals through coordination of relationships such that group activities enhance the individual potential of members. The essence is the creation of organizational synergy. In the process of cooperation and coordination, members provide training for each other and contribute to the development of the organization as a whole. Follett contends that empowerment is an ongoing process, which results in the development of new abilities and insights and provides boundless resources for the organization (Florin & Wandersman, 1990; Vogt & Murrell, 1990). Deming’s points 8, 10, 12, and 13 are related to management of people and these reflect the basic underlying philosophy of Follett. For example, following Follett’s ‘empowerment’, Deming theorizes that employees will be able to ‘drive out fear’ and the leaders will be able to lead and manage with knowledge rather than by ‘slogans’. While providing empowerment, management will be able to ‘remove barriers that rob people of pride in their work’. Thus, empowerment is the key to manage employees effectively.

MANAGING PROCESS

While Taylor emphasized the importance of achieving ‘efficiency’ by focusing on time and methods study and concentrating on the ‘best’ methods of production, Deming focused on improvement in production process and ensuring ‘quality’. Though both Taylor and Deming argue that efficiency is important, they differ with regard to the methods of achieving efficiency. Taylor believed that improvement in work occurs only through careful and continued study of work, and finding best processes and methods through implementation of best methods (Taylor, 1911: 25). Since in those days statistical quality control techniques were not available, Taylor used methods that were tested and also encouraged the workers to ‘suggest improvements’ both in methods and in implementation process (Taylor, 1911: 128). Taylor contended that if the new method suggested by the workers was “better than the current method it would be adopted as the standard for the whole establishment” (Taylor, 1911: 128). According to Deming, continued improvement in process is possible through customer satisfaction rather than by fulfilling the quota. Further, using statistical control charts, Deming suggests plotting data and studying the results to identify the special and common cause of variation.

It is interesting that Follett also focused on ‘process’ rather than ‘product’ or function. Follett contended that organizational synergy is the core of all organizational functioning and is possible only by achieving functional unity. Continuous improvement in quality is possible only when the organization focuses on the ‘process’ as dictated by the law of situation. Thus, Follett bridges the gap between the Taylorian concept of achieving efficiency and the quality management of Deming through the focus on process as situation demands.

WORKPLACE COOPERATION

Securing workplace cooperation is important, according to Taylor, to increase efficiency in the production process. Taylor highly recommends coordination between management and workers and suggests that management should change the system such that ‘interests of workmen and the management should become the same (congruent), instead of antagonistic (incongruent)’ (Taylor, 1911: 53). To do this, Taylor advocated breaking the job into some basic elements so that workers study the job well and improve while working. Taylor recommended that eight functional foremen (Taylor, 1911: 122) will act as specialists to aid the workers and achieve ‘personal cooperation between the management and the men’ (Taylor, 1911: 26). Functional foremen were supposed to be the “expert teachers, who are at all times in the shop, helping and directing the workmen” (Taylor, 1911: 124).

Deming’s approach of securing workplace cooperation is somewhat different from that of Taylor’s. Deming was of the view that, instead of breaking the job into elements, it is necessary to ‘break down the barriers between staff areas’ (see point #9 from Table 1). Deming considers that

while appraising performance and determining the variation in performance, it is necessary to see if the variation is caused by the system itself. Contrary to the Taylorian concept of ‘knowledge of work’ as the basis of cooperation, ‘knowledge of system’ is the basis of cooperation according to Deming.

Follett provides an interesting link between these slightly different approaches. Follett argues that by changing organizational design, introducing empowerment, and cross-functional teamwork, organizations will be able to secure workplace cooperation. Further, Follett proposed a new kind of cooperative conflict resolution resulting in win-win situations for both management and workers. She advocated flatter organizations and opined that cross-functional teams and participative management is the key to achieve workplace cooperation. Cross-functioning would foster a freer exchange of knowledge within organizations. Thus, Follett provides a bridge of ‘knowledge’ as the basis for securing cooperative workplace—the basis also incorporated by Deming. Taylor’s functional foremanship is embedded in Follett’s cross-functional teams.

CONCLUSION

In this short essay we attempted to provide a link between Taylor’s scientific management and Deming’s total quality management through Follett’s innovative ideas on management. The differences in thinking of these three scholars may be primarily due to differences in the way ‘management’ was thought and progressed as a discipline. As the work on management progressed from procedures, techniques, methods and practices to processes and human relationships, the thinking of the scholars also a reflection of these changes. One should acknowledge that increasingly fractionalized corporate ownership is one of the contributory factors in thinking by different scholars at different time periods. Despite the differences, there were some common denominators that we tried to capture in this paper.

Follett’s contributions were largely unheralded for over five decades, but now some scholars are calling her ‘the pragmatic prophet of management’ (Graham, 1995). At the time when Follett developed innovative ideas (during early the 1920s and 30s), Taylor’s scientific management was in full swing in both US and UK and this may be one of the reasons why organizations did not realize the contributions of Follett. Follett advocated several concepts well ahead of her time: empowerment, flatter organizational structures, work teams and cooperative labor-management relations (Linden, 1995). These concepts foretold Deming’s ideology of bringing total quality management. Deming’s outline of 14 points and focus on managerial leadership, knowledge of people, and statistical science for continuous improvements can be successfully linked to Follett’s innovative ideas of cross-functional teams, horizontal authority, empowerment, power and conflict. In turn, these provide a necessary link between scientific management principles and total quality management. It is fitting to quote Rossler & Beruvides (1994) who boldly state that, “perhaps too many people are just a little too willing to let others interpret for them what others have written or

said or done. An elaborate game of telephone then plays itself out” (1994:15). Thus, to fully understand the contributions of Follett as a bridge between Taylor and Deming we encourage you to read the original works of these three scholars.

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LEADING A POSTMODERN WORKFORCE

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ABSTRACT

This paper explores contemporary leadership theory within a postmodernism society in the public sector. The paper investigates leadership theory by comparing and contrasting bureaucratic theory, transactional leadership theory, and transformational leadership theory in the ever changing workforce of federal employees. The study is significant because there are government-wide human capital problems, and this is highly relevant to anyone who must lead in the public sector. The paper concludes with a set of five strategic implications for researchers and practitioners. This effort contributes to further exploration into understanding leadership and organizational culture in the public sector.

INTRODUCTION

With sixty percent (60%) of the government's 1.6 million employees eligible for retirement, the federal government finds itself in a hostile environment. The changes in workforce demographics will create leadership challenges in the future as Baby Boomer employees make their massive exodus from the workforce. For complementary leaders, there is a caution sign that reads, "Proceed cautiously, danger ahead." Currently, the government has declared its human capital practices as a "high risk" area of concern (Blunt, 2003). Linda Springer, the Office of Personnel Management (OPM) Director, calls this issue a retirement tsunami and feels managers need to start taking this cultural shift seriously (Ziegler, 2006). In the past, corporate culture has been able to stabilize such influences; corporate culture gives employees a blueprint for understanding organizational values and beliefs. What happens to an organization when the leader's values are no longer aligned to the belief system of the employees? Reacting to changing cultural influences and global threats abroad, the federal government finds itself in a major transformation process (Blunt, 2003). These situations are made more complicated due to the massive exodus of its leaders. The leadership training for senior executives has been sparse and inadequate in relationship to these culture changes.

The purpose of this article is to provide an exploratory insight related to leadership theory and its application in the postmodern era. This paper examines several aspects of leadership theory consisting of bureaucratic theory, transactional leadership theory, and transformational leadership theory in the public sector. The primary objective is to identify the current values attributed to contemporary leadership and compare varying leadership theories in the postmodern period. The following discussion will be investigated: (a) the current organizational changes, (b) the postmodern culture and its impact upon the workforce, and (c) understanding leadership theory in the

postmodern period. These issues are significant because of the potential conflicts that can exist between leaders and employees in organizations.

CONTEMPORARY LEADERSHIP THEORY

Leadership Theory provides researchers an opportunity to understand leader-follower relationships in a cultural framework. Prewitt (2004) noted that the current leadership theories are based on modernist assumptions and are out of date with leading postmodern organizations. Schmidt (2006) argued that leadership definitions reflect the viewpoint of an industrial society, and a new era begat a new definition for leadership. Nevertheless, this paper defines leadership as a contextual influence that has an impact on subordinates' attitudes and performance through effects on the subordinates' perceptions of their job characteristics (Northouse, 2004). Therefore, leaders have the capacity to influence the values needed in a changing organizational environment (Ferguson, 2003).

POSTMODERN CULTURE

Postmodernism is a philosophical term with a cultural context. Modernism places man at the center of reality by utilizing science to explain the meaning of life. In contrast, postmodernism places no one at the center of reality and has no core explanation of life (Kelm, 1999). Ingrassia (1995) figuratively described modernism as an attempt to elevate man into God's place while postmodernism seeks to destroy the very place and attributes of God. Some of the key themes of postmodernism include (a) Pluralism, which means the denial of any one universal truth; (b) Non-objectivism, which conveys that all facts are not hard facts and science has limited application; (c) Deconstruction, which teaches that meaning is through the interpreter rather than the text or object interpreted; (d) Cynicism/pessimism, which promotes the absence of absolute truth, no universal purpose in life, and no possibility of arriving at certain knowledge of anything; and (e) Community, which advocates meaning and understanding determined through a tribal or community setting (Kelm, 1999). Therefore, postmodernism provides a conceptual threat to traditional organizations.

METHODOLOGY

This investigation provides exploratory data by utilizing an extensive literary review of over 20 documents including scholarly opinions and practitioner discussions. The contributions made by well-known researchers in the fields of postmodernism and leadership theory, such as Bass and Yukl, were investigated. The primary objective of this review of literature is to increase depth of knowledge in this field in order to make a relevant analysis of each theory. Electronic databases such as EBSCO Host and the Internet were searched using key words 'leadership theories,' 'bureaucracy,' 'transactional leadership,' 'transformational leadership,' 'organizational values,' 'corporate culture,'

and ‘postmodernism.’ There was a significant absence of literature related to leadership theories as it relates to postmodernism. Through this process, there is an opportunity to discover the gaps in research.

DISCUSSION AND ANALYSIS

Amoeba-like Organizational Change

The enormous demographic changes within the 21st century American workforce are creating organizational growth pains. For the first time in American history, there will be four generations co-existing in the workplace (Hankin, 2005). With global competition, a tightening of corporate budget, and threats of outsourcing core organizational functions, leaders can not afford to manage in the traditional fashion. Currently, there is considerable buzz among practitioners and academics on the role of leadership theory and organizational culture in organizational performance. Harding (2000) explained that a new generation of workers will produce significant human resource problems for traditional organizations. He described this new generation as the *Emergent Workforce*, which crosses age groups, gender, race, and geography (Harding, 2000). This new set of workers is driven by a new set of values and job expectations. For example, Emergent employees are viewed as job hoppers. In one study, Emergent employees (88%) believed that loyalty was not related to employment length while Traditional employees (94%) viewed loyalty as the willingness to stay with an employer for the long term (Harding, 2000).

Another key value shift among generations is their priorities. While Baby Boomer males and previous generations were more work-focused, Generation X and Y employees are more family-focused. Younger generations are also less accepting of traditional gender roles than previous generations (Harding, 2000). This Emergent Workforce also seeks a more spiritual workplace that emphasizes personal integrity and accountability (Hankin, 2005). Clearly, these differences in value systems create communication barriers and can result in an unproductive organization (Washington, 2002). Thus, the Emergent Workforce becomes more complicated to manage because its members are often motivated by different leadership styles as shown in Table 1 (Hackman & Johnson, 2004).

A Clash of Cultural Values

As organizations continue to replace employees under this changing environment, traditional organizational values will be challenged by postmodern values. Economic, social, and political influences have impacted the value system of today’s workforce (Wren, 1994). Organizations communicate their expectations both formally and informally through their corporate culture. Scholars call this environment organizational culture. In most businesses, organizational culture has

been a domain where institutions try to promote the values of a more efficient and effective organization. Schultz (1992) argued, however, that postmodernism challenges the very assumptions of the merits of corporate culture. First, postmodernism questions the assumption of the goodness of such corporate values. It transforms these corporate icons into hollow rituals (Schultz, 1992). Second, postmodernism questions corporate culture as an effective tool for organizational identity. Postmodern advocates view corporate culture as producing carbon copies of the same culture in different organizations; this situation effaces the last remains of the organizational originality (Schultz, 1992). Lastly, postmodernism rejects the premise that corporate values can regulate employee behaviors through meaningful events and internalized knowledge. It replaces this organization assumption with the seductiveness of corporate culture to act through aesthetics, renewal, and modern illusions (Schultz, 1992).

Table 1, Characteristics of the Emergent Workforce	
Generation	Leadership Preference
The Matures (1927- 1945)	As a follower -Thrive under a directive leadership style As a leader -Lead others by taking charge and making decisions alone
Baby Boomers (1946-1964)	As a follower -Thrive under a participatory leadership style As a leader -Lead in a collegial and consensual fashion with a general concern of others Source: <i>Leadership: A Communication Perspective</i> by Hackman & Johnson
Generation X (1965 -1976)	As a follower –Does not thrive under authority leadership style As a leader -Lead others by being adaptable to change, fair, competent, participatory, and diversity-sensitive
Generation Y (1977 – present)	As a follower - Does not thrive under authority leadership style As a leader -Lead with a tolerance of others, value-centered, rule-oriented, and culturally sensitive Source: <i>Leadership: A Communication Perspective</i> by Hackman & Johnson

These postmodernism premises attack the heart of traditional organizations and thus, provide an avenue for organizational conflict between leaders and followers. Malphurs (2004) explained that organizational values co-exist on two levels, personal and corporate. On a personal level, individuals in general have a set of core values that dictate how they respond to a situation. At the corporate level, every organization has a set of core values that guides the organization while it does business. Organizational values are a key component of its character and signal to followers the organization's bottom-line (Malphurs, 2004). Conversely, an individual's value system will help determine a person's involvement in an organization or a cause. A well-informed employee who understands his own value should align himself with a similar minded organization (Malphurs, 2004). However, the problem arises when the employee's values do not align with the organization. Hackman and Johnson (2004) explained that leaders and followers are also interrelated. For

example, Admiral Gunn has very liberal opinions on social issues more than his fellow officers. However, Admiral Gunn must promote the organizational values of the Navy with which he may personally disagree. How does Admiral Gunn promote corporate values to his followers in which he does not believe?

At this moment in time, an organizational conflict is brewing. Today, many organizations operate under a modern cultural cloud while the vast majority of new employees operate in a postmodern culture. Leaders exert a great amount of influence in guiding their followers although followers are more involved in implementing the organizational objectives. A leader's behavior is also influenced by cultural values and tradition (Yukl, 2002). Organ and Bateman (1991) suggested that the existence of a hierarchy, competition, and constraints on behavior guarantee that frustration will be frequent in an organization. Malphurs (2004) maintained that congruent values are the answer to these value conflicts. In mixing modern and postmodern values in organizations, incongruent values are generated (Malphurs, 2004). Therefore, there will be conflicting values held by the modern organization and the competing values espoused by the Emergent Workforce in the postmodern period. This creates chaos (Malphurs, 2004). For example, postmodernism is multicultural and promotes social tolerance. The media heavily bombards today's workforce with these impressions. The casual observer may not observe anything from these media influences; however, organizational leaders can not afford to underestimate these culture changes. Postmodern influences are clearly seen in urban subculture where its followers are characterized by (a) questioning everything, (b) viewing truth as relative, (c) valuing relationships over institutions, (d) valuing the ability of storytelling, and (e) demonstrating of emotion and experience (Smith & Jackson, 2005). Therefore, organizational leaders will need to be real, relevant, and respectful to gain credibility with this subculture (Smith & Jackson, 2005).

Analyzing Leadership Theory in a Culture Quagmire

Applying varying leadership theories in a postmodern workplace could produce a cultural quagmire for organizations. Malphurs (2004) argued that a leader's values influence his followers greatly even though leadership is an amoral process. He further noted that leaders often mirror the organizational values and shape employee values by modeling the way (Malphurs, 2004). Kouzes and Posner (1995) argued that leaders make visions and values meaningful to followers by modeling the way. Much of the assumption about the leader's values is that it is a constant; however, leaders as well as organizations go through a process of value formulation, which may cause a state of flux (Malphurs, 2004). Postmodernism also influences leaders as well as employees, organizations and leaders take longer for these changes to take place; therefore, leaders and organizations are relatively fixed (Malphurs, 2004). Hackman and Johnson (2004) argued that leaders find themselves as negotiators when incompatible interest comes into play and forces leaders to seek a cooperative climate where both parties can agree. However, the competing interest of a modern organization and

a postmodern workplace makes this difficult for leaders. Therefore, a new leadership paradigm in organizations needs to be analyzed under continual postmodern influences. Schmidt (2006) advocated a new type of leader in the postmodern age. He describes a leader who understands that many things can not be analyzed away by science. Schmidt also insisted that this leader needs principles based on character and integrity where postmodernism creates a world without rules (Schmidt, 2006, pg.2). According to Prewitt (2004), current leadership in large bureaucratic organizations is invalid for a postindustrial society. It is invalid because it assumes a rational workplace where a bureaucratic structure is sustainable (Prewitt, 2004). However, in the postmodern age, organizations are often complex, networked, emotional, and chaotic.

Understanding leadership theory in postmodernism is vital because leaders are responsible for discovering and articulating the organization's primary values (Malphurs, 2004). Yukl (2002) explained that most leadership theories are focused on processes at only one level because it is difficult to develop a multilevel theory for all situations. Vickrey (n.d.) argued that communications is critical for effective leaders and can explain why some leaders are better than their peers with similar followers. There are concerns, however, about the power of leaders in organizations to influence the values of followers. Yukl (2002) explained that scholars worry about the misuse of power and control over information to bias follower perceptions which could be perceived as attempting to change the underlying values and beliefs of followers. Likewise, the Emergent Workforce requires more collaboration, social intelligence, and worker participation in order to maintain sustainability. Thus, this investigation analyzes three current leadership theories that may be found in public organizations and forecast the impacts of postmodernism influences.

Each theory has its own unique characteristics as shown in Table 2 and 3. First, the leadership theories are Bureaucratic Theory, Transactional Leadership Theory, and Transformational Leadership Theory. In the 1900s, Max Weber postulated that a manager's authority in an organization should be based not on tradition or charisma but on the position held by managers in the organization hierarchy (Wren, 1994). Weber's ideas formed the basis of what is known today as Bureaucracy Theory. In a bureaucratic structure, large organizations such as governments and religious institutions can control employees by giving leader legitimate power and standardizing work processes. The federal government is a form of bureaucracy.

Therefore, many outsiders view organizational leaders as bureaucrats. This title is not viewed as a positive attribute in society. The elements of a bureaucracy include: (a) authority and responsibility clearly identified and legitimized, (b) hierarchy of authority producing a chain of command, (c) leaders selected by technical competency, training, or education, (d) leaders appointed, not elected, (e) administrative officials work for fixed salaries and have no ownership of process or organization, (f) Administrators subject to strict rules for control (Wren, 1994). Although Weber viewed these attributes as positives during his time, societal changes and economic pressures have shifted public opinion on the merits of bureaucratic theory in a postmodern culture. Bureaucratic leaders influence employees primarily on their legality of authority and the right to

issue commands (Bass, 1990). Clearly, these assumptions maintained by bureaucratic leaders will create a value crisis for members in a postmodern workforce.

Postmodern Theory	Bureaucratic Theory	Transactional Theory	Transformational Theory
Advantages Worldview	Advantages Formalized	Advantages Feedback to employees	Advantages Visionary
Aesthetics	Chain of command	Rewards employees for performance	Seek to change the framework
Rhizomatic (thinking outside the box)	Division of labor	Communication exchange	Raise employees' consciousness
Flexibility	Legitimate leaders	Adherence and Maintenance of existing goals and norms	Demand for higher employee performance
Commitment to small groups for meaning	Fixed compensations		Empowerment
	Duties of leaders and employees clear		Inspirational
			Higher level of motivation and morality
			Consideration of employees as individuals as well as value of team
			High communications
			Promote innovative thinking
			Trust building
Source: Ingraffia, Schmidt, & Schultz	Source: Revision-notes.co.uk	Source: Yukl, Hackman & Johnson, Bass, & Northouse	Source: Yukl, Hackman & Johnson, Bass, & Northouse

The process of bureaucracy is often viewed as a cold and heartless process to postmodern employees. For example, a government office manager may work in an environment where she is not respected or valued because of her pay grade. She is never given special assignments or career development activities. She soon grows tired of asking to be treated fairly and becomes a robot in her job. This is a tragic situation because this office manager is special. In her private life, she serves as the chairperson for her local nonprofit organization and is highly respected in her community because

of her leadership abilities. Unfortunately, the employee's worth is seen through the lens of an impersonal process. Some of the problems with a bureaucracy include the impersonal rules, absoluteness of leadership in authority, and the enforcement of standardization and conformity on individualism (RevisionNotes.Co.Uk, 2001). Organizational leaders need to analyze the ramifications of bringing these postmodern employees into a non-flexible bureaucracy.

Postmodern Theory	Bureaucratic Theory	Transactional Theory	Transformational Theory
Disadvantage No single truth	Disadvantages Impersonal rules	Disadvantages Appeal to the "economic man" Status quo	Disadvantages Social architect
Historical and cultural process over reason	Impersonal guidelines		
Disappearance of authority, unity, continuity, purpose, and commitment	Discharge of authority based on rules without regard for persons	Based on rewards and consequences Inflexible in a bureaucracy	Aligned to organizational values and norms
Emergence of complexity, multiplicity, fragmentation, resistance, negation, rupture, and irreverence for any specific goals	Norm of impersonality govern interpersonal relations		Elitist
Against institutionalism	People are considered parts of a group instead of an individual		Antidemocratic
	Inflexible and slow to cultural changes		
Source: Ingraffia, Schmidt, & Schultz	Source: Revision-notes.co.uk	Source: Yukl, Hackman & Johnson, Bass, & Northouse	Source: Yukl, Hackman & Johnson, Bass, & Northouse

Second, many effective managers still utilize Transactional Leadership Theory in order to obtain organizational objectives. Transactional leadership along with transformational leadership was advocated by Burns, a political sociologist, in order to link the relationship between leader and follower (Northouse, 2004). In the Transactional Leadership Theory, leadership involves the exchange of benefits. While the leader provides a benefit to followers, in exchange followers comply by achieving the leader's desired outcomes (Jin, n.d.). The leader-follower relationship is submerged in self-interest. The followers enjoy the benefit of extrinsic and intrinsic rewards while the leader

obtains status, the privileges of authority, influence, prestige, or other management benefits (Bass, 1990). Critics argue that transactional leaders are most concerned with satisfying the physical needs of the employees and do not want to disrupt the status quo (Hackman & Johnson, 2004). For example, Bill is a survivor of massive downsizing in his company. Because of this fact, his managers give Bill plenty of overtime to get the job done. However, Bill is unhappy because he is doing the work of several people. Bill never does anything extra from the organization because he feels the company does not care.

Transactional leadership also depends upon management by exception and negative feedback; it is an advantage as long as the employee is a rational and economic being (McAulay, 2003). Therefore, these values do not align themselves well to the needs of postmodern employees who are searching for a meaningful existence. Finally, the Transformational Theory also provides an effective method of exchange between leader and followers. In contrast to Transactional Leadership Theory, Transformational Leadership Theory speaks to the higher needs of employees. Whereas transactional leaders work within the framework of the self interest of his or her employees, transformational leaders seek to change the framework (Bass, 1990). A transformational leader will request employees to transcend their own self interests for the good of organization and focus on long-term benefits rather than short-term gain (Bass, 1990). Unlike transactional leadership, transformational leadership attempts to develop employees in such a manner to reach for high performance without the carrot of reward or reprimand. Bass argues that transformational leaders, however, augment some of the attributes of transactional leaders on the efforts, satisfaction, and effectiveness of employees (Bass, 1990). Transformational leaders attempt to raise the consciousness of his followers (Bass, 1990). These attributes work well with postmodern employees. In spite of this positive outlook, transformational leadership has its problem with postmodernism. First, transformational leaders in the federal government still operate in a bureaucratic system that is highly inflexible. Second, transformational leaders are social architects of their organizations so that they promote organizational values and norms to employees (Northouse, 2004). Some postmodernists would consider this negative since these leaders often influence and shape employee attitudes for the organization's benefit. Other scholars argue that transformational leadership is elitist and antidemocratic (Northouse, 2004). Similar to other theories, Transformational Leadership Theory has its drawback when applying postmodern concept. For example, Kelly, a federal executive, created a charged workplace environment for his employees. The workforce loved his charismatic ways. However, his fellow managers demonstrate unethical conduct. While Kelly encourages his employees to have high ethical behavior, he is silent on his peers. By supporting this corporate culture, Kelly loses the trust of his postmodern workforce.

Finally, Schmidt (2006) explained that the postmodern leader should have the following characteristics: (a) adaptable, (b) spiritual-focus, (c) tolerance for ambiguity in life, (d) entrepreneurial in his approach, (e) service-oriented, (f) accountable for action, (g) life-long learners, (h) upgrading performance, and (i) participatory. Although there are many positive attributes of

contemporary leadership theories, organizational leaders should be cautious with implementing them in a postmodern framework.

CONCLUSION

Organizational leaders in the public sector will find new challenges as they begin to replace their present workforce in this Postmodern Era. The paper demonstrated that there is an impending public crisis as postmodernism makes its impacts on this traditional framework. Influences of postmodernism make the Emergent Workforce more cynical and pessimistic about life. Postmodernism has employees debating on what is morally right. Therefore, organizational leaders must operate against a backdrop of postmodernism where followers are untrusting of corporate culture. Organizational leaders, who ignore or dismiss the impact of these cultural changes, may find themselves managing a chaotic situation.

Through this investigation, an analysis was conducted comparing aspects of leadership theories to postmodernism. The paper argues that each of the leadership theories have some flaws when applied to postmodernism. Further empirical research needs to be conducted on the influence of postmodernism on leaders, the workforce, and organizational performance. The insight gained through this research may lead to better management strategies for handling a transitional workforce in the public sector. This effort contributes to further exploration into understanding leadership and organizational culture in the public sector.

STRATEGIC IMPLICATIONS

The following strategic implications emerged as a result of this investigation and are offered to assist organizations with transitioning an Emergent Workforce into their organizations:

- 1 Communicate formally and informally the organizational values to employees on a routine basis. Hackman and Johnson (2004) explained that leaders exert a great degree of influence in an organization; therefore, leaders must have more responsibility for the overall direction of the organization.
- 2 Demand that managers model those corporate values to followers in the organization. Kouzes and Posner (1995) explained that leaders must lead by example so that employees can see they are committed.
- 3 Discuss organizational values with recruits in the early stage of interviewing to determine if their values align themselves with organizational values.

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- 4 Train current managers so that they understand the needs of this Emergent Workforce. Linda Springer, the OPM Director, feels that managers need to be aware of generational traits because differences in work attitude and style can pose challenges (Ziegler, 2006).
 - 5 Establish an intern program at your workplace where new employees can connect to the organization. Encourage interns to seek out mentors. Discuss the various leadership styles and allow workers to get a sample of each from current leadership.

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THE STRATEGIC IMPLICATIONS OF TECHNOLOGY ON JOB LOSS

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ABSTRACT

This paper investigates the impact of technology on job loss (both slowed growth rates and actual declines) across the economy (both manufacturing and service segments) and reflects on the strategic implications of that activity for firms and individuals. It argues that the technology-enabled economy will continue to expand and produce an increasing potential for further job losses or reallocation across all economic sectors. Firms able to create or adopt strategies for coping with the implications of technology in their respective industries may be able to convert a potentially difficult situation into an opportunity. Finally, this paper begins to investigate the question: how will (or can) the economy provide continued or future employment to displaced workers or alternatively give them and their firms some practical strategic coping mechanisms?

INTRODUCTION

Much has been written about the loss of jobs from first-world developed countries (i.e.: United States, Japan, Western Europe) to third-world developing countries (i.e.: Mexico, China, India). The focus often has been on manufacturing jobs simply because jobs lost in that sector provide politicians and labor leaders alike with opportunistic sound bites. However, many economists argue that the total drop in factory employment (in one country) is not due largely to foreign displacement (to another country). The loss of factory jobs is happening all over the world. From Drezner (2004), during the seven-year period 1995 to 2002, 22 million global factory jobs disappeared – not due to offshoring but due to increased productivity (which, even in the face of those lost factory jobs, resulted in a 30 percent increase in global industrial output since 1995). The implication, to both individuals and firms, of protracted job losses and/or reallocations is a topic of considerable importance and concern to anyone with an interest in the future. A generalized examination of options for firms and individuals faced with the changing conditions brought about by technology is a crucial starting point for determining how best to respond at both levels. This paper is a preliminary effort intended to consolidate many of the observations and information related to technology generated job losses with some initial suggestions on mediating their effect.

Substitute “advances in technology” for “increased productivity” and the underlying shift from a labor-intensive to a technology-enabled economy can be explained. This shift not only

explains the significant loss in global factory jobs, but the off-shoring effect seen, for example, in the movement of customer service call centers from the U.S. to India. Still, the shift of technology-enabled jobs from one country to another (whether they are manufacturing or service) is not a loss of jobs within the global economy. Economic arguments abound that such shifts are not only necessary but desirable since they lead to overall economic improvements. Of greater concern is the permanent loss of jobs (or those jobs never created) because of the increased use of technology.

Business Week estimates that every one percent of annual productivity growth allows U.S. corporations to eliminate about 1.3 million jobs. Productivity in the U.S. has grown almost two percent since 2001; that accounts for almost all of the 2.5 million jobs lost in the past three years. Many argue that the best remedy is for the government to help those workers find new employment, rather than trying to stop the jobs from being destroyed in the first place. So, as the argument goes, the loss of manufacturing jobs is not of major concern – just as the agriculture economy was transformed by the manufacturing economy, the manufacturing economy, in turn, will be transformed by the service economy. They might be different jobs, and some workers might suffer from the displacement effects, but the necessary jobs will be created none-the-less.

Agrawal and Farrell (2003), noting the aging U.S. population, suggests that the U.S. will need 15.6 million more workers by 2015 to maintain both current living standards and the current ratio of workers to the total population. But, where will those jobs come from? What happens when the simultaneous impact of automation, mechanization, and computerization not only continues to eliminate manufacturing jobs worldwide (between 1995 and 2002 the U.S. lost 11%, Japan lost 16%, Brazil lost 20%, and China lost 15% of its manufacturing job base) but also begins to eliminate service jobs at an increasing rate?

THE PATH TO JOB DISSOLUTION

The U.S. economy is down about 2 million jobs since 2001, despite a government report of 308,000 jobs added in March, 2004. In an economy that by most measures – from soaring corporate profits to rapid growth in output – is in high gear, the lack of significant job growth may seem puzzling but only because the underlying reason often is not identified. Outsourcing, whether offshore or locally, plays a role; however, a major factor is the use of technology, which has allowed employers to increase productivity with fewer workers.

Much of the public's attention has focused on "offshoring" – the decision by U.S. companies to send work to countries such as India and China – as the culprit in the lack of new employment. Yet, it is estimated that offshoring accounts for only 10 percent of the jobs lost and would affect less than 2 percent of employed Americans (Drezner, 2004). Clearly, offshoring is not the real culprit in the lack of new employment. Companies have learned how to do more – produce more goods, service, and profits – with fewer workers by using technology more effectively.

Technology is being used to streamline and automate operations and reduce the need for labor, while also requiring remaining workers to do more. Those changes mean that companies can respond to increased demand without hiring – at least without hiring as many workers as in the past. Even as the economy grows, many companies reap benefits by rethinking how they use people and technology.

New jobs are essential to sustaining the economy. The United States needs 150,000 new jobs each month to keep pace with the growth in the labor force; this is 1.8 million new jobs each year. Since 2001, while about 2.8 million people have been added to the labor force, the economy is down about 2 million jobs. Thus, the economy has been unable to sustain a rate of job preservation, let alone job growth, to absorb the increase in the labor force.

The problem is not in the jobs lost to offshoring. In the global economy, those jobs are not “lost” they are simply shifted from one location to another. In fact, as Bednarz (2004) points out, under some conditions the “lost” jobs may “shift back” to the local economy. While such economic shifts can be difficult for the individual workers involved, the impact on those workers often is dealt with effectively. In a growing economy, the argument goes; the affected workers are simply absorbed by the new jobs created.

The greater problem is in the jobs lost to technology. The use of technology makes efficiency improvements possible without replacing employees whose jobs no longer exist. Those are jobs truly lost to the economy. This requires the economy to create an increasing number of new jobs: both for new entrants to the labor force and for those replaced by technology. The question is: under what conditions will the economy sustain those higher rates of job creation? Further, the affected workers likely will need retraining to take advantage of the new, more technology-oriented jobs being created. The question is: what skills will workers need for the new jobs being created?

For example, secretarial positions shrank from 3,702,000 in 1992 to 2,302,000 in 2000 while computer systems analyst positions increased from 695,000 to 1,742,000.(Bajaj, 2004) The direct consequence is that employees will be forced to learn new skills as positions are replaced by less expensive technology. One result is that as firms race to acquire new more “efficient” means for conducting business, employees race to acquire new knowledge or training that will make them less easily replaced.

STRATEGIC IMPLICATIONS

Those questions speak to the critical importance of environmental scanning and the need to explore further from conventional sources of information. Technological changes, and the concomitant opportunities and threats, can originate from places, both geographically and intellectually remote, from those traditionally considered. Both firms and workers need to be aware of what changes are taking place and the likely impact of those changes, either in firm operations or in employment possibilities.

As early as 1983, *Retail & Distribution Management* (a London retail industry periodical) quoted Donald Harris (director of computing at Tesco, a UK shopping club similar to Sam's Club or Costco) on the threat and opportunity of technology. Mr. Harris argued that unless care is taken, the advent of advanced systems essential to maintaining economic stability will create serious job losses and, consequently, social disruption. The primary reason is that, because of the employment of new technologies, the service sector will have a decreasing capacity to absorb the labor displaced from the manufacturing sector.

Gottinger (1990) argued that the growing use of technology in the industrial and service sectors is expected to have implications for the employment of labor. This will create widespread structural unemployment and a large number of permanently unemployed people. The adoption of new technologies also will cause a polarization of the workforce into categories of high-skilled and low-skilled workers. The intermediate range of jobs, vital for a sense of upward mobility, will nearly be eliminated. Finally, while new jobs may be created to help balance the losses, they likely will be in high-skilled areas and create a need for massive retraining programs.

Papaconstantinou (1995) echoes Gottinger and notes that many people hold new technologies responsible for the extensive job losses in a wide range of industries as well as for the growing gap between skilled and unskilled workers. Yet, he recognizes that technological change is central to the process of growth and employment creation. It is what allows increases in productivity and in real incomes. Further, it is clear that the most important issue is not on the impact of technology on job loss, but on the impact on the nature and organization of work and on occupational structure and skill requirements of jobs. Thus, the introduction of new technologies changes skill requirements and the distribution of jobs across different occupations.

Addison, Fox, and Ruhm (2000) addressed the effect of technology on labor displacement. They noted that, while prior research highlighted the importance of international trade and technology as sources of secular changes in wage inequality and unemployment, none focused on job displacement; a potentially important component that has received attention from policymakers and the public. Their analysis provides evidence that the risk of job loss is relatively high for workers employed in industries investing heavily in computer technologies and with high R&D employment intensity. This is an indication that such industries are able to substitute technology for labor in their workforce. A secondary finding of interest is that workers who use computers at work face considerably lower risk of job loss. They had not previously seen that result reported in the literature and they interpreted this as an indicator of skill-based technological change.

In Chabrow (2004), Gene Huang, chief economist at Federal Express, states that the economy is being transformed by the rapid adoption of IT and the Internet. Whereas historically new technologies often took a generation for their impact to be fully felt – the internal combustion engine for example – this is not so with IT and the Internet; their influence has been almost immediate. That rapid adoption plays havoc with job creation. Traditionally, job growth depended on economic cycles – as the economy grew, so did employment. But, recent job growth has slowed because of

structural changes caused by IT-generated efficiencies. Huang said, “In purely cyclical adjustments you do expect labor to increase ...” but “... with the infusion of IT, you have a different factor [creating] a different situation.”

Givord and Maurin (2004) analyzed the changes in the risks of involuntary job loss in France between 1982 and 2002. They found that the risks were higher in the 1990s and in the 1980s. Using econometric analysis to separate the effects of institutional changes from the effects of new technologies, they show that job loss is significantly more pronounced in industries that have the largest share of R&D workers and the largest rate of new technology use. Their findings suggest that technological changes contribute to decreasing the incentive to keep workers for long periods of time and to increasing job insecurity.

This body of research indicates a need to be strategically aware of the impact of technology on both the firm and the individual. Firms will want to take advantage of the higher efficiency and greater cost controls possible when substituting technology for labor and they will want the higher profits that can be generated from such a strategy. Individuals will want to be aware of which jobs will be eliminated by technology, which jobs will be created by it, and what skills they will need to take advantage of the new jobs.

CONSEQUENCES FOR FIRMS

The strategic implications that technology imparts to firms is often a consequence of its interchangeability with other firm assets or its ability to provide a synergistic link with other firm activities. In some firms, technology is viewed as both a mechanism for and a means of increasing the overall efficiency of a firm's activities. Traditionally, one way to think of technology is that it provides the employee with the tools to become more efficient.

Alternatively, organizations are beginning to view technology as not only making the employee more efficient, but also as a mechanism for making the overall organization more efficient without the employee. It is this latter approach that may cause the greatest consternation among corporate critics because it implies that the employee is a disposable and readily replaceable component of a firm's business activities. It might be suggested however that employee replacement via technology is only an extension of firm behavior that initially began with the industrial revolution.

Perceptions that job loss due to the application of technology is somehow different now as compared to previous technology incarnations are not entirely correct. The industrial application of technology has always had as one of its side effects the ability to make some types of jobs disappear forever. After all, the Gutenberg printing press essentially decimated the illuminated manuscript business and the telegraph had a similar effect on pony express riders.

Technology supplanting individuals, as in ATMs, airline kiosks, automated ordering systems, self checkouts, etc., reduces overhead and improves productivity but also creates an increasing emphasis on efficiency rather than effectiveness. Although efficiency focuses on achieving results

without wasted time or effort, and so can result in a much greater increase in productivity, effectiveness focuses on achieving competent results. While American consumers have been quick to applaud the faster service and lower prices resulting from technology's efficient productivity, they also complain about reduced levels of competence and customer service. Still, the effort appears to be away from effectiveness (employees) toward efficiency (technology).

This shift is directed at reducing the most uncontrollable component of a firm's cost structure, i.e., the employee. Health care cost increases alone dictate the possibility of employee reduction as one mechanism for increasing the overall efficiency of a firm. Thus, for example, banks can reduce relative costs, and increase controllability over their costs, by shifting from employee-staffed branches to ATMs. This can improve operational efficiency and result in lower (or fewer increases) in customer service charges. At the same time, this reduces the effectiveness of customer service; customers now do their own service. This strategy may be attractive because, from the customers' viewpoint, the gain in efficiency may be greater than the loss in effectiveness.

Competitive strategy is first and foremost about outperforming rivals based on differences that can be preserved. Merrifield (2000) argues that a sustainable competitive advantage is essential for survival in a hyper-competitive global marketplace. While operational effectiveness might be part of an overall strategy (TQM, Benchmarking, etc.), it cannot generally support a competitive advantage either alone or for long. That is because while operational effectiveness is necessary, it is not sufficient to meet the threats faced in a competitive marketplace. Superior profitability becomes more difficult to maintain as marginal improvements in operational effectiveness provides little advantage relative to rivals. Operational effectiveness also is insufficient because of competitive convergence – the more firms attempt to adapt the winning “strategies” of their competitors the more they look alike. Once the competitive level of effectiveness has been reached, efficiency becomes a driving force in a competitive strategy.

Thus, the essential strategy is to not only achieve competitive effectiveness but to achieve operational efficiency by choosing to perform activities differently from rival firms. For example, Southwest Airlines has maintained a competitive advantage over full-service airlines through the application of specific technologies to replace people and so to provide similar services at a lower or constant cost. Similar effects can be noted for Wal-Mart and UPS in their use of logistics technologies.

It can be argued that technology-based advantages are short-lived because competitors can simply copy the technology. Indeed, that is true and explains, for example, why banks cannot compete on technology alone. But, it also explains why banks, to be competitive, must adopt the extant technology. Further, there is a significant difference between simply using technology and incorporating technology into a competitive strategy. That difference explains why full-service airlines – which simply add technology to an existing infrastructure – cannot compete effectively against Southwest Airlines – which uses technology strategically. For example, Southwest has closed three call centers, permanently displacing 1,100 employees, as 60 percent of its customers now

reserve flights on the firm's website (Bajaj, 2004, 6D). Improved productivity is further reflected in the number of passengers that check in using kiosks or online connections. Even with increasing growth, Southwest has been able to maintain its employee levels, thus controlling costs while increasing productivity, which is a key component of Southwest's overall success.

FIRM BASED COPING BEHAVIORS

Firms need to address the consequences of new technologies and incorporate it into their strategic thinking. They can do so by looking sideways and encouraging cross-industry analysis of how technology is being developed and used. They can create and support corporate "Bumble Bees," intra-organizational technology hives similar to the "skunk works" of earlier times. Firms can recognize the limitations of traditional planning processes, which too often focus on extrapolations from the known past rather than expectations about the vague future. They can do so by encouraging a more distant early warning approach and by tracking technologies that have potential for systematic, economy-wide changes.

Consider, for example, the potential impact of RFID technology on logistics and distribution, among other areas. Wal-Mart has determined that all of its suppliers adopt this technology because it will significantly improve its distribution capabilities while reducing costs. Many of Wal-Mart's suppliers, although they will meet the imposed deadlines (Lacy, 2004), are resisting the adoption of this technology; claiming it is too expensive or too complex to be implemented at this time. However, firms – even if they are not yet affected by Wal-Mart's decision – which recognize the importance of RFID as a systemic-change technology will be able to incorporate it into their strategic thinking and be able to, when necessary, integrate it into their own operations.

Firms must decide not only to embrace new technologies but also to adjust their attitudes toward their employees likely to be affected by the technologies. Employees must be viewed as strategic assets of the firm. Firms that can utilize new technologies while enabling their employees to adapt will be better positioned than those that do not. Firms should empower employees to become part of the technology process through adaptation, training, or some other mechanism. As Table 1 indicates, the use of technology requires a shift in behaviors, and consequences. Firms need to view new technologies as factors that "help" their employees do a better job or to do a job with greater efficiency. Employees need to view new technologies as factors that improve their ability to get "the job done." Technology is merely a tool. As such, it may not guarantee the creation of new jobs but it need not become the wedge that always results in job loss.

In order to cope with the introduction of new technology, firms must adopt a more aggressive approach to seek out new technologies and implement them when and where appropriate. Although not all inclusive by any means, there are three primary coping mechanisms that all firms ought to use. The first coping tool is awareness. Firms tend to become complacent with their current approaches to business and fail to consider the possibilities of what new technologies might bring to bear on their

business models. The organization must encourage a more generalized awareness on the part of its employees that they are a critical part of the technology alert system for that organization. Rather than maintain a single technology contact for the organization, the firm should adopt a more organic structure that allows individual employees to seek, find, report on and, in some cases, implement technology improvements in their respective areas. Since few organizations can look in all directions at the same time, allowing more employees the latitude to look around provides a larger base of technology screeners to search for ways that might help the organization be more efficient or effective. More critically, it places part of the technology search problem squarely on those most likely to be impacted by technology changes. If handled properly, a firm could seek out and explore a variety of technology opportunities and threats at a relatively low cost in different areas simultaneously at a significant advantage both to the individual doing a specific job as well as to the firm.

Old Behavior	Old Consequences	New Behavior	New Consequences
Enhance skills only when forced by customers, etc.	Employees lose effectiveness and efficiency.	Promotes ongoing skill enhancement.	Employees remain effective and become more efficient.
Avoid new trainings expenses whenever possible.	Employee obsolescence tolerated.	Actively provides opportunities to acquire new skills	Employee viewed as an upgradeable resource.
Views training as a necessary evil.	Avoids training efforts whenever possible.	Views training as a competitive necessity.	Seeks new mechanisms for improved training.

The second coping tool, beyond simple awareness, is a more structured approach to evaluating specific technology changes that will likely impact the firm or its operations. It is very difficult to predict the implications of revolutionary technology (but see the discussion that follows). It is, however, fairly easy to identify evolutionary changes in technology that will affect a firm and/or its business. Natural progression is often a good starting place for a company to evaluate the implications of changing technology on its operations. For example, speed and capability have increased steadily with succeeding generations of communication technology. Therefore, an obvious technology issue for any organization, where communication is a crucial component of its activity, is to evaluate the implications that faster speed and greater capability will have on those operations. Banks should not have been surprised when customers, desiring the convenience of on-line banking, wanted more information in real time to take advantage of their always-on broadband connections. It should not have been a surprise because it was clear that the evolution of high speed

communications was progressing across an array of service businesses, including financial institutions. Convenience as provided by precursor technologies such as bank's ATM experiences should also have prompted an awareness that customers would expect additional services sooner rather than later. Failure to recognize the evolutionary impact of one's own technology is frequently due to the lack of a structure to assess implications as changes occur. Without a structured assessment, it is difficult for an organization to put its own technology in perspective much less new technology that may enhance or supplant it.

The third coping tool is more problematic. An organization must consider radical innovations. These are problematic because their importance often goes unrecognized initially. One of the best examples is that of the Internet itself. Although a compilation of technologies, the Internet was initially viewed as almost irrelevant to most businesses. Yet, within a relatively short period, it became critical to business operations ranging from supply chain management to direct sales. Access to information alone has made it a mandatory part of virtually all organizations' communication strategies. Organizations both large and small failed to visualize how a technology tool such as the Internet might and probably would impact their businesses. It was not that for a lack of information. There were many sources that suggested new opportunities and threats would result. The problem is more an attitude that refuses to accept that radical innovations are actually more common than one might anticipate and that they create an environment in which "business is different." The truth is that no business is immune to the implications of technological change. The lack of awareness that many firms have toward technology is therefore compounded by an unsupported belief that somehow their organization or firm is immune to its effects. Without a systematic approach, that goes beyond the evolutionary, to reflect on what the organization is doing, could do or might do in terms of radical technological opportunities and/or threats that belief can be a barrier to a thoughtful strategic response. The general consequence is an organization that either ignores or minimizes the implications of radical technologies on their operations. You can not plan for things that you do not consider. Planning for radical change is crucial to being prepared. Even if you miss the exact technology, you are in a better position to adapt if you embrace the possibility that some technology as yet unspecified will require a significant strategic response.

CONSEQUENCES FOR INDIVIDUALS

Entry-level positions increasingly will be subject to alteration or dissolution as newer and less expensive technologies reduce the need for those jobs. As noted above, offshoring is expected to account for only ten percent of the jobs lost in the U.S. labor market. Technology will account for the other ninety percent; a much greater impact.

Consider, for example, the banking industry. Craig (1997) reports that since peaking in 1989, the industry's payrolls have shrunk. Between 1989 and 1995, banking employment fell more than 6 percent, while industry output increased 15 percent. An explanation for the contraction in jobs is

readily available. Technology has transformed the way banking is done; with obvious effects on labor demand. The explosion of ATM transactions is often cited as a primary reason for banking's dwindling payrolls. Even the name – automated teller machine – suggests the substitution use.

The most visible effect of ATMs has been to transform the multitude of fully staffed branch offices that existed in the 1970s into today's sparsely staffed branch located in grocery stores and other venues. Although a visible sign of technology, ATMs are not the only example. Less obvious examples may be more accurate computer models of loan risk that allow banks to substitute lower-skilled, and lower paid, employees for higher-skilled, and higher paid, loan officers.

These changes also have taken place in the travel industry with the adoption of web-based travel services, in the grocery industry with the adoption of self-checkout scanners, and in the service station industry with the adoption of pre-pay gas pumps. In all of those cases, a large number of transactions that had been processed by employees are now processed by technology. This effect is accelerating. Hotels and airlines and car rental agencies are installing kiosks that allow customers to check in or check out without human intervention. Voice mail, email, voice recognition, wireless connectivity, etc. can replace receptionists and secretaries in offices. Smart cards accessing interconnected systems through doctor's office and pharmacies could replace legions of clerks processing health insurance claims. Automobiles with self-diagnostic routines could alert owners and schedule repair visits eliminating all but the actual mechanic that completes the repairs.

How will individuals cope in such an environment? One approach seems to be the consequence of economic law; the new replaces the old and the old, however painful it might be, is swept away. This often is the response provided to the 50+ year old employee whose 30+ year job has just been eliminated by technology. The decision appears harsh, but as many economists argue, a necessary consequence of the competitive engine that drives the U.S. economy. Ramsaran (2004) notes that the savings created by such economic shifts free up resources for more highly skilled and higher-paying jobs.

Roberts (2004) well states the case, "But the loss of lower-paying, lower-skilled jobs – either to other countries or to other industries within a country – is an integral part of economic development. The change is always wrenching for those who lose their jobs, but the economy benefits as labor and capital are redirected toward higher value-added industries. And while there may be temporary dislocations of workers, persistently high unemployment is not the rule because workers eventually move to different jobs in new industries."

Thus, displaced workers face a clear choice; remain displaced or switch to the new jobs being created. Still, even for those willing to switch, two questions remain. What if technology replaces workers so that no new jobs are created? Even if new jobs are created, will they provide the same level of compensation and benefits as the jobs that are replaced?

INDIVIDUAL COPING BEHAVIORS

The strategic approach requires individuals to remain aware of the impact technology has on both job loss and job creation. To know and understand which types of jobs are being lost due to the use of technology and which types of jobs are being created by the use of technology.

Mishel (1989) analyzed the contraction of the U.S. manufacturing segment and showed that wages created by jobs in expanding industries were less than those of jobs lost in contracting industries, and that the difference was growing. His results are shown in Table 2.

	Expanding Industries	Contracting Industries	Wage Gap
1981 – 1986	\$287.51	\$422.20	\$(134.69)
1972 – 1981	\$295.65	\$361.13	\$(65.48)

From Mishel (1989) Table 4

This is an indication that not only do workers need to protect against job loss, but they to protect against job creation that produces lower-paying, less-desirable jobs.

Zavodny (2003) reports a connection between technology and job separation. Some of her results suggest that less educated workers may be more likely to experience an involuntary separation in technology intensive industries than more educated workers. That is, technology itself may be replacing those jobs that do not require high skill levels, and so less education. However, workers who remain cognizant of technology and continue to increase their educational attainment will find employment in a technology-enhanced workplace.

Whitacre (2004) tells workers to “prepare for the worst.” While her comments focus on jobs lost to offshoring, they apply equally well to jobs lost to technology. While you cannot prevent the loss of your job, you can plan ahead to prevent or minimize your losses. Obtaining and retaining jobs in the future will require flexibility, creativity, and life-long learning. Your plan should include answers to the following questions:

- ◆ What other fields interest me?
- ◆ Do I have the skills to move to that field?
- ◆ What are my true salary needs (not wants)?

On the positive side, *The Economist* (2004), again talking about offshoring but equally applicable to technology, argues that the jobs lost will be low-paying ones, such as bank tellers and switchboard operators. Job protectionist practices will not save such jobs. If they do not go overseas they will be replaced by technology. The new jobs created will demand skills to handle the deeper incorporation of information technology, and the pay for those jobs will be higher.

Whether Mishel or *The Economist* is right may depend both on where in the employment pool workers start and whether or not they take Zavodny's and Whitacre's advice. Certainly those who start with a higher propensity for education may be in a better position to meet Zavodny's conditions and to follow Whitacre's advice and in a better position to take advantage of the higher-paying, more-desirable jobs that are created.

Those who do so will take a multi-career approach and will continue to gain experience and training. They will develop the capability of recognizing potential threats and the skills to view them as opportunities. They also will recognize that any attempts to delay technology or block job loss are more likely to put them at risk for future employment. Instead, they will learn to embrace and take advantage of available technology and provide increasing value to their employers. Table 3 indicates how employees must alter their behavior to reflect the current realities of the job environment.

Old Behavior	Old Consequence	New Behavior	New Consequence
Enhance skills only when pushed.	Employee loses flexibility.	Ongoing skill enhancement.	Employee remains flexible.
Avoid new skills.	Employee obsolescence.	Actively seeks new skills.	Employee on the technology edge.
Views training as a necessary evil.	Avoids training whenever possible.	Views training as survival.	Seeks every training opportunity.

IMPLICATIONS FOR THE FUTURE

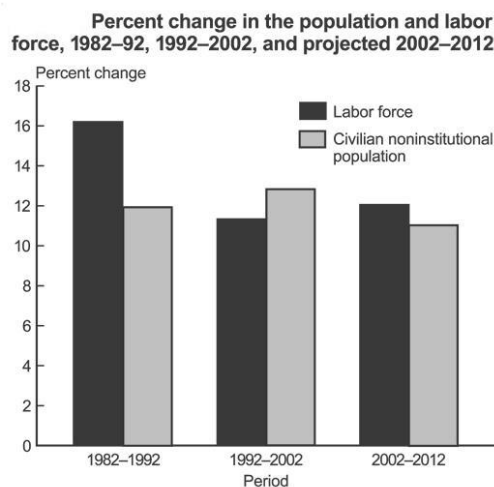
Technology is neither good nor bad. It is a tool like any other than can be used poorly, well or for purposes in between. The key is to recognize that regardless of what people might think they would prefer technological job dissolution or change is a fact of life. As jobs done by hand were replaced by jobs done by machine during the industrial revolution, we are now watching jobs once done by people now being replaced by technology.

The U.S. Department of Labor (2004) reported its predictions for occupational outlook for the ten year period 2002 – 2012 and, where appropriate, compared the predictions with actual results

from 1992 – 2002. The U.S. Department of Labor has a series of summary charts that have been selectively used to illustrate several areas where technology may lead to job loss and those areas where technology may lead to job creation. The trends that may be observed from the graphic presentation of Department of Labor data should not be overstated but they are quite clear in their implications. The role that technology is and will continue to play in both job loss and creation is readily apparent although its exact form can be expected to remain somewhat ambiguous.

First, as Chart 1: Percent change in the population and labor force, 1982-1992, 1992-2002, and projected 2002-2012 indicates, growth in the labor force is expected to exceed population growth during 2002 – 2012. That is, job growth should be sufficient to meet demand. The questions are, what kinds of jobs will be created – and which types will be eliminated?

Chart 1

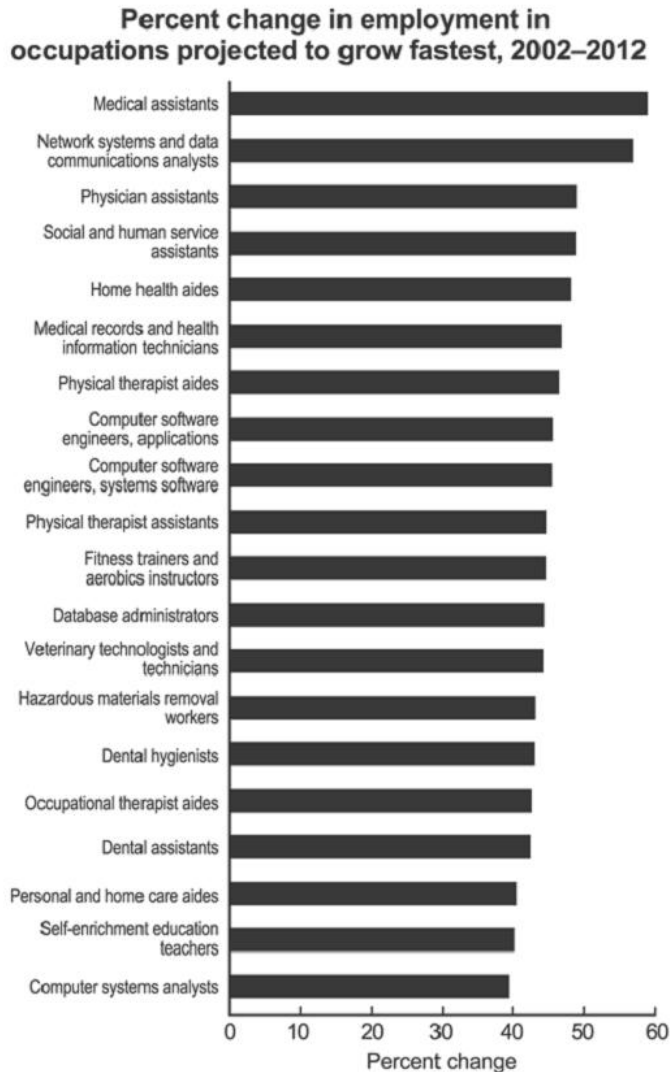


Source: Chart 1 from APPENDIX U.S. Department of Labor, Bureau of Labor Statistics Bulletin 2540: Occupational Outlook Handbook, 2004-05 Edition (June 2, 2004).

The jobs projected to grow the most, either in percent change in employment (see Chart 2) or in the largest numerical increases (see Chart 3), tend to fall in two major categories: personal services and technology. The personal services area includes health care, teaching, and retail or distribution services (clerks, waiters, truck drivers, etc.). These are jobs that, at present, cannot be eliminated by technology. However, they might be significantly changed by technology, which may change the skill set necessary to do those jobs. The technology area primarily includes those who will develop the new technology applications of the future (software engineers, database

administrators, systems analysts, etc.). These, of course, are jobs being created because of technology and will require higher skills than the jobs they replace.

Chart 2



Source: Chart 7 from APPENDIX U.S. Department of Labor, Bureau of Labor Statistics Bulletin 2540: Occupational Outlook Handbook, 2004-05 Edition (June 2, 2004).

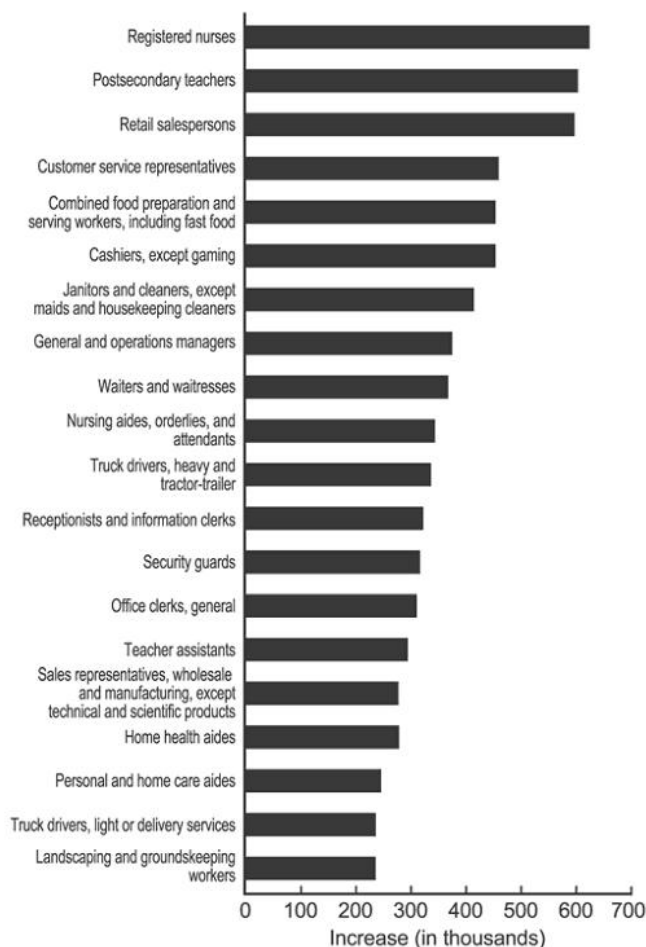
One consequence for those individuals whose jobs are eliminated is how best to respond. In order to obtain the new jobs being created, it is likely that the displaced individuals will need to cultivate new skills. Enhanced skill in the use and application of specific new technologies however

may not guarantee protection from future job loss. The pattern of job creation and loss via technological change is ongoing and it is probable that people will encounter this process multiple times during their work life. Thus, current exhortations for life-long learning may represent the only valid approach to career development in a technology-based economy.

The negative impact may become more pronounced if workers displaced multiple times choose to remove themselves from the learning process, and hence from the job market. In other cases, it may be a side effect of workers unwilling or unable to take a lesser position or reduced compensation. Regardless of what jobs might be available, an individual's perception of self worth could constrain the willingness to develop new skills or to accept interim employment.

Chart 3

Occupations with the largest numerical increases in employment, projected 2002–2012



Source: Chart 8 from APPENDIX U.S. Department of Labor, Bureau of Labor Statistics Bulletin 2540: Occupational Outlook Handbook, 2004-05 Edition (June 2, 2004).

Both situations are increasingly commonplace, as indicated by the number of displaced workers electing to opt out of the traditional job markets. According to Uchitelle and Leonhardt (2006, p. A14), more than one out of every eight men age 30 to 54 in the United States does not work; and many are missing from unemployment statistics because they have stopped looking for work.

As technology continues to impact the skills needed for successful employment, more and more individuals may find themselves unable or unwilling to gain the necessary skills and may be relegated to the long-term unemployed. If that trend both continues and increases, it could become a serious social issue. Nations, where the relative percentage of the long-term unemployed or under employed is increasing, face the prospect of difficult and potentially harsh choices. Firms operating in those nations face the real possibility that their efforts to improve productivity through new technology will prompt governmental reactions to counter the unemployment that is a byproduct of the increased productivity. In the end, governments concerned by the prospect of a large segment of the population being composed of unemployed and disaffected workers could restrict the improved technology that would enhance productivity.

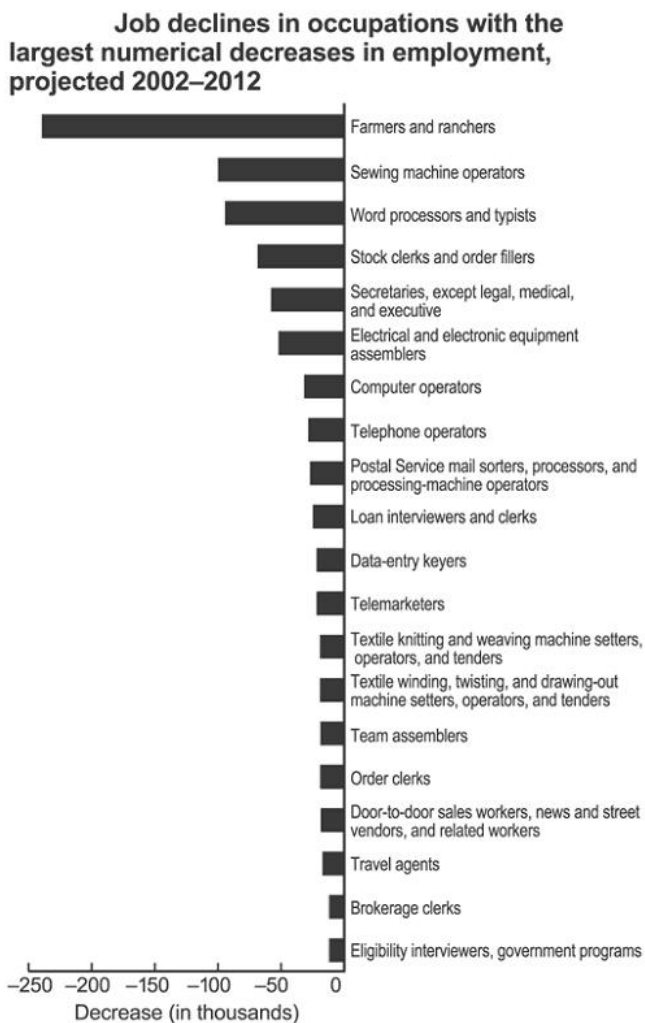
The areas of projected job declines are listed in Chart 4: Job declines in occupations with the largest numerical decreases in employment, projected 2002-2012. These include reductions in agriculture (farmers and ranchers) and certain manufacturing sectors (textile workers) as technology continues to enable those industries to produce more with fewer workers. However, of interest, are the service sector jobs in decline (word processors, secretaries, computer operators, telephone operators, Postal Service employees, order clerks, travel agents, etc.). These are jobs that are being replaced by technology (including those where technology enables offshoring).

The U.S. Department of Labor study states, "The majority of the 20 occupations with the largest numerical decreases are office and administrative support and production occupations, which are affected by increasing plant and factory automation and the implementation of office technology that reduces the needs for these workers. For example, employment of word processors and typists is expected to decline due to the proliferation of personal computers, which allows other workers to perform duties formerly assigned to word processors and typists."

These changes will not happen quickly; many of the jobs being replaced by technology will be available for a number of years. However, most of those jobs will grow at much slower rates and a large percentage of their needs will be for replacement workers, which also will slow over time. Chart 5: Number of jobs due to growth and replacements needs by major occupational group, project 2002 – 2012 (Appendix) shows that both service and professional jobs will maintain both high growth rates and high replacement rates. However, almost all of those jobs will be in areas that will require a bachelor's degree or higher. The mid-level jobs in office, sales, and management will experience much slower growth rates due to the impact of technological replacement. Finally, technology will continue to significantly reduce job growth and replacement needs in transportation, production, construction, and agriculture. The implications for firms and prospective employees are clear. Technology will continue to evolve and in so doing create conditions that necessitate constant

change. Firms must change to remain competitive and employees must change to remain employable. It will be to each one's advantage to recognize that the nature of the workplace has forever been altered.

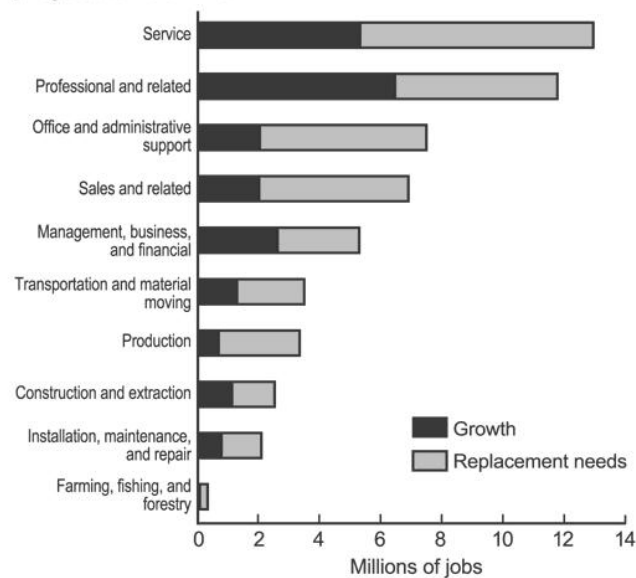
Chart 4



Source: Chart 9 from APPENDIX U.S. Department of Labor, Bureau of Labor Statistics Bulletin 2540: Occupational Outlook Handbook, 2004-05 Edition (June 2, 2004).

Chart 5

Number of jobs due to growth and replacement needs by major occupational group, projected 2002–2012



Source: Chart 10 from APPENDIX U.S. Department of Labor, Bureau of Labor Statistics Bulletin 2540: Occupational Outlook Handbook, 2004-05 Edition (June 2, 2004).

OBSERVATIONS AND CONCLUSIONS

Job loss and reallocation of resources will continue as a consequence of technological change. Inherently, change will require adjustment on the part of affected individuals as well as organizations. For many, these changes will be acutely painful and impart serious consequences, while for others; technological change will bring unexpected opportunities and rewards. The same pattern has been played again and again throughout history. However, there are mechanisms that might be utilized to minimize the negative consequences for individuals displaced and to encourage organizations to respond more intelligently. Those mechanisms include recognizing the strategic benefits of technology. Firms can do so by adapting and adopting technology that creates competitive advantages, and using technology to maintain that advantage. Individuals can do so by recognizing the impact of technology on job availability and maintaining education and skills to take advantage of those opportunities.

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THE INFLUENCES OF THE CHIEF EXECUTIVE OFFICER'S STOCK AND OPTION OWNERSHIP ON FIRM RISK TAKING: AN EXAMINATION OF RESOURCE ALLOCATION CHOICES

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ABSTRACT

We examine the influences of the chief executive officer's (CEO's) stock and option ownership on firm risk taking, proxied by resource allocations to research and development (R&D), discretionary funds, and advertising. We contend that at low to moderate values of managerial stock ownership, risk-increasing decisions may predominate. At substantial executive equity values, however, we suggest that risk-reducing decisions may be motivated. In contrast, our contention is that CEO option holding values are monotonically and directly associated with corporate risk taking. Additionally, we expect the joint effects of stock and options on firm risk may be different from their individual effects. The empirical findings are supportive of our contentions.

INTRODUCTION

Researchers have studied the influences on firm outcomes of ownership stakes. The implication of the related studies has often been that the effect on corporate outcomes of common stock is similar to options (e.g., Joseph & Richardson, 2002; Mehran, 1995; Shleifer & Vishny, 1997; Wright, Ferris, Sarin, & Awasthi, 1996). The influence of stock ownership, however, may be different from that of option holdings. That is because common stock ownership confronts executives with both downside and upside share price movements whereas option holdings ordinarily expose managers to solely upside price movements. Hence, options only expose managers to the upside outcome potential, whereas stock ownership exposes managers to both upside and downside outcome potentials.

Our contention is that the influence of common stock and option ownership on corporate risk taking may be similar or different, not only individually, but also in combination. We suggest that at low to moderate values of common stock ownership in the firms they manage, the effect of executive equity stakes is similar to options. Contrarily, we argue that at substantial values of stock

ownership, managers may become overinvested in the firm and predisposed to negatively influence firm risk. In this setting, consequently, the impact of common stock may be opposite to that of option ownership. Additionally, where examined in combination, we find that options may nullify the negative influence of stock ownership on firm risk at substantial values of executive stock ownership.

The notion that executive equity ownership may have non-linear associations with corporate outcomes, however, has been recognized in prior studies. For example, Stulz (1988) and Shivdasani (1993) argued that the relationship of ownership structure of target firms with the value of takeover bids may initially be positive and then subsequently become negative with rising insider ownership stakes. McConnell and Servaes (1990) as well as Morck, Shleifer, and Vishny (1988) demonstrated a non-monotonic relation between firm value and ownership stakes of board members. Joseph and Richardson (2002) showed a non-monotonic association between ownership incentives of board members and resource allocation to advertising. Also relevant to our work, Wright, Ferris, Sarin, and Awasthi (1996) reported a non-linear association between executive ownership and firm risk, using the dispersion of earnings forecasts.

Our contributions in this study, however, differ from those made in the prior literature. Specifically, we focus on values of equity ownership (in isolation of option ownership) and executive preferences for changes in corporate risk as motives for select resources allocation decisions. Where managerial ownership stake values in the enterprise are low to moderate, we suggest that risk-increasing decisions may prevail since with such decisions the value of executive equity stakes may increase (Agrawal & Mandelker, 1987; Chang, 2003; Wruck, 1994; Wright, Kroll, Krug, & Pettus, 2007). In contrast, with substantial values of common stock in their enterprises, we expect that executives may prefer risk-reducing corporate strategies since they might perceive that such strategies could protect their private interests.

Additionally, in this study we examine the influence of option holdings (in isolation of shareholdings) on executive decisions that entail corporate risk taking, proxied by resource allocations. Executives who are granted stock options benefit as stock prices rise. If the value of the firm's stock goes down, however, executives are not confronted with a reduction in their wealth. In this situation, they will not exercise their options. With firm risk taking, consequently, managers may benefit as firm and option values increase but they will not experience wealth loss if corporate and option values decrease. Finally, in this work we analyze the joint impacts of managerial common stock and option ownership on firm risk, proxied by resource allocations. In some circumstances, our study indicates that the joint effects on corporate resource allocations of ownership incentives are similar to their individual effects but not in other circumstances. We further detail our contributions in the upcoming sections of the paper.

The remainder of the manuscript is organized as follows. In the forthcoming section, we develop our hypotheses in the context of the related literature. We then describe our sample construction and research methodology. Subsequently, we present the results and indications of the

empirical examination. Finally, we provide our discussion, point out the limitations of this work as well as offer suggestions for future research directions.

LITERATURE REVIEW AND THE DEVELOPMENT OF HYPOTHESES

In a number of related works it is asserted that senior executives who hold negligible equity positions in their enterprises are likely to engage in risk-reducing or nonvalue-maximizing decisions (Grossman & Hoskisson, 1998; Kroll, Wright, Toombs, & Leavell, 1997). That is because a concern for the potential loss of their employment income, coupled with a limited monetary interest in the outcomes of winning risky strategies, may lower risk taking predispositions of executives. With equity stakes in the enterprise, however, it is argued that risk-enhancing or value-creating decisions may be motivated because the worth of managerial equity stakes may rise with corporate risk taking (Chang, 2003; Esty, 1997; Wruck, 1994). Thus, senior executives are risk averse, unless they are provided with stock ownership.

Our contentions in this study are partly compatible with the preceding arguments in the literature. We subscribe to the notion that the agent with negligible common stock ownership has a predisposition to lower firm risk. Moreover, we concur that if agents are provided with common stock ownership in the enterprise, as their equity stakes rise, so should their inclinations to consider risk-enhancing alternatives because, as a consequence, the value of their common stock ownership may increase. Our arguments, however, diverge from the preceding assertions in the literature as managerial ownership of common stock in the enterprise becomes substantial. In this situation, we anticipate that CEOs' distress, due to the potential for overinvestment in the firm, will again induce them to consider risk-reducing alternatives. Emphasis should be made that all of CEOs' human capital is invested in their enterprises. Moreover, at substantial values of common stock ownership, a large proportion of CEOs' personal net worth may also be invested in their firms. Under these circumstances, senior managers may find it prudent to lower firm risk taking because their personal fortunes are largely tied to the firm. In our investigation, consequently, we anticipate that overinvestment in the enterprise may motivate risk-reducing managerial decisions that are inconsistent with the interests of stockholders. The existing literature, however, predominantly implies that there is a uniformly positive relation between stock ownership and beneficial, risk-enhancing decisions, with increased insider ownership stakes continuously uniting the interests of shareholders and management (e.g., Bethel & Liebeskind, 1993; Chang, 2003; Esty, 1997; Grossman & Hoskisson, 1998; Kroll, et al., 1997).

Because we argue that the influence of CEO stock ownership (in isolation of option ownership) on firm risk taking may be non-linear, in the following paragraphs we examine this issue in the context of CEOs' decisions with respect to select corporate resource allocations. As noted, our expectation alternatively is that option holdings (in isolation of shareholdings) may uniformly and directly impact corporate risk taking. Consequently, we also focus on the linear effects of executive

option ownership on resource allocations. Additionally, we anticipate that the joint influence of stock and options on corporate risk may be dissimilar to their individual influence; therefore, we likewise study the combined influence of ownership incentives on firm risk, proxied by resource allocations. For the purpose of our study, we focus on corporate resource allocation choices involving research and development, discretionary funds, as well as advertising. We focus on these resource allocation choices because they remain largely under-explored with respect to their linear or non-linear determinants - - structures of senior managers' options or equity stakes.

Research and Development

Corporate resource allocation choices may involve R&D spending with its consequent ramification for firm innovations. Shareholders may prefer that resources be allocated to firms' R&D projects because enterprises that continuously outspend their rivals in R&D normally develop superior technological know-how (Doukas & Switzer, 1992; Sundaram, John, & John, 1996). In conformance with this premise, Griliches (1981, 1998) and Hall (1993, 1998) concluded that R&D spending is positively associated with process or product innovations and corporate value.

Expenditures on R&D are risky, however, because they entail "a greater variability of outcomes and a greater probability of failure" (Balkin, Markman, & Gomez-Mejia, 2000: 1119). In effect, expenditures on R&D are risky for firms since the benefits of R&D occur in the future but those benefits are far from certain (Scherer & Ross, 1990). Note that such expenditures involve certain present cash outflows but cash inflows associated with them accrue in the uncertain future. Hence, even though R&D efforts could be beneficial, these risky efforts may conceivably be impeded in favor of other efforts, such as risk-reducing corporate diversification activities (Wright, Kroll, Lado, & Van Ness, 2002). Our discussion suggests that, to protect their self-interests, CEOs may be risk averse and, hence, slow to innovate.

The possibility that CEOs may be "slow to innovate, and shun risk" (James & Soref, 1981: 2) has a long history. For instance, Schumpeter worried that entrepreneurs are being replaced by risk-averse, non-innovative senior managers who develop "something of the psychology of the salaried employee working in a bureaucratic organization" (1950: 156). Monsen and Downs expressed their concern that "managerial firms are more cautious; spend less on crash research programs . . . and . . . grow more slowly than they would if they sought to maximize profits" through risk-taking and innovations (1965: 256).

Risky decisions, such as those associated with higher R&D spending, may result in failure; consequently, managerial employment security in the firm may be threatened. The potential for job loss implies possible personal financial losses. On a broader front, senior managers may also deliberately impede R&D efforts on promising but risky projects in order to reduce their non-financial personal costs. These non-financial costs may encompass "the additional effort required to master new technology or manage new ventures or the anxieties inherent in higher-risk corporate

undertakings” (Wright, et al., 1996: 447). Since with negligible ownership stakes, CEOs have a limited monetary interest in the outcomes of successful risky R&D projects, the preceding pecuniary and non-pecuniary personal cost considerations imply a reduced managerial proclivity toward firm risk taking. Hence, where CEOs lack significant stock ownership, risk aversion may reduce their commitment to corporate R&D and firm innovations.

Alternatively, in related works, it is argued that with equity ownership in their enterprises, senior managers may promote firm risk taking and innovations (e.g., Bethel & Liebeskind, 1993; Chang, 2003; Esty, 1997). Put simply, when executives are themselves shareholders, they are more prone to make decisions in conformance with stockholder interests, since that will enhance their own wealth. The implication of much of the existing literature is that, not only as senior executive ownership increases will beneficial risk-increasing decisions predominate, but more generally, as shareholder concentration increases, there will be a uniformly positive association between shareholdings and beneficial risk-taking activities (e.g., Esty, 1997; Kroll, et al., 1997).

Regarding CEOs, we differ with the premise that there would be a monotonically direct relationship between their stock ownership and corporate risk taking via R&D spending. In contrast, our contention is that managerial equity ownership will have a non-linear impact on R&D expenditures. In our view, where CEO equity stakes are significant but not excessively vested in their firms, they may consider risk-increasing R&D projects. The reason is that risk increasing R&D projects may result in winning corporate innovations, boosting corporate value and enhancing the worth of managers’ shareholdings in their firms. Where managers’ equity stakes in their enterprises are excessive, however, we argue that due to the potential for overinvestment in the enterprise, CEOs may be risk averse, reducing their commitment to corporate R&D and firm innovations.

In contrast, we have discussed that the influence of option holdings on firm risk taking via R&D spending may be monotonically positive. That is because, with such risk taking, CEOs may benefit if firm and option values are enhanced but they will not be confronted with wealth loss if corporate and option values fall. Our contentions regarding the separate effects of stock or option ownership on R&D spending are reflected in the following hypotheses:

- H₁: At low to moderate values of CEO common stock ownership, the value of shareholdings will be positively associated with corporate R&D spending, but at substantial values of CEO stock ownership, there will be a negative relationship between the value of shareholdings and R&D spending (i.e., an inverted U-shaped relationship is expected between stock ownership and R&D spending).

- H₂: There will be a positive association between CEOs’ option holding values and corporate R&D spending.

Evidently, the individual effects on firm risk of common stock versus options are expected to be similar at low to moderate values of CEO equity stakes. At substantial values of CEO common stock ownership, however, we have stated that the effects on corporate risk of common stock may be opposite of options. Consequently, the joint effects of common stock and options on enterprise risk taking may be different than their individual effects. As stipulated below, three competing possibilities may be hypothesized regarding the combined effects of stock and options on firm risk via R&D spending. These possibilities encompass the dominance of option incentive by stock incentive, the dominance of stock incentive by option incentive, or the negation of stock incentive by option incentive, at substantial values of CEO ownership incentives:

- H₃: At low to moderate values of CEO common stock ownership, the joint value of stock and options will be positively associated with corporate R&D spending, but at substantial values of CEO shareholdings, the joint value of stock and options will be negatively associated with R&D spending.
- H₄: There will be a positive relationship between the joint value of CEO shareholding-options and R&D spending.
- H₅: At low to moderate values of CEO common stock ownership, the joint value of stock and options will be positively associated with corporate R&D spending, but at substantial values of CEO shareholdings, the positive effect of options will negate the negative effect of shareholdings.

Discretionary Funds

Corporate risk taking may be impacted by managerial resource allocation decisions regarding the extent of discretionary or redundant funds. Consistent with the implication of arguments provided by Fruhan (1979) and Wruck (1994), we contend that the extent of discretionary funds (i.e., net working capital minus long-term debt) can present potential problems. Indeed, the concern of a number of researchers is that executives may maintain excessive funds and misappropriate those funds (Chung & Wright, 1998; Fruhan, 1979; Jensen, 1986; Wruck, 1994). For instance, as an extension of perquisite consumption, executives may adopt pet projects that they find desirable at a cost to owners via the utilization of discretionary funds.

Furthermore, we anticipate that in order to buffer the firm from unexpected events that may produce changes in the income stream, threatening their employment income, managers may intentionally maintain excessive discretionary funds. Although higher levels of discretionary funds are costly to the firm's shareholders, senior executives may be beneficiaries of the greater protection that these funds provide. The reason is that firm risk, as well as managerial employment risk, is

reduced with choices involving higher levels of discretionary funds (Agrawal & Nagarajan, 1990; Chung & Wright, 1998). Axiomatically, discretionary funds may be enhanced by an increase in the level of net working capital or by the minimization of long-term debt (Fruhan, 1979, Wruck, 1994). We emphasize that excessive amounts of net working capital are costly to shareholders since such funds may be misappropriated and they represent low-yielding assets (i.e., assets with yields below the firm's cost of capital) (Fruhan, 1979; Wruck, 1994).

Lower levels of corporate debt may similarly be costly for owners because of the resultant higher firm liquidity that limited debt service payments afford (Chung & Wright, 1998; Jensen, 1986). Also, low levels of debt represent the de-leveraging of the enterprise, harming the interests of the shareholders as the enterprise foregoes earning a positive spread on borrowed funds. Higher corporate debt alternatively serves as an effective means for managers to bond their promise to pay out future cash flows, reducing agency costs (Jensen, 1986; Wruck, 1994). Large amounts of debt also normally motivate managers to strive for efficiency to ensure that debt service is maintained, hence, thwarting the threat of corporate bankruptcy and their own discharge.

The premise of existing works is that senior executives who hold negligible stock ownership in their firms may be expected to indulge in risk-reducing decisions (e.g., Bethel & Liebeskind, 1993; Kroll, et al., 1997). Consequently, they may be anticipated to prefer holding excessive amounts of discretionary funds in their enterprises, lowering firm risk as well as their own employment risk. Alternatively, the implication of the related literature is that, with significant equity ownership, executives may promote firm risk taking (Chang, 2003; Wruck, 1994). This may be accomplished via a reduction of discretionary funds. Although lessening discretionary funds increases firm risk, its benefit is that the firm's possession of low-yielding assets is reduced (Fruhan, 1979; Wruck, 1994). A lowered level of discretionary funds also implies a greater managerial concern for corporate efficiency due to an increased threat of firm failure (Jensen, 1986; Wruck, 1994).

Since we expect a nonlinear association between the value of CEOs' common stock ownership and firm risk taking, we contend that as the value of managerial ownership stakes is expanded from negligible to moderate levels, there will be an inverse relationship between the value of stock ownership and a firm's extent of discretionary funds. As executives' equity stakes become substantial, however, we alternatively anticipate a direct relationship between the value of managerial stock ownership and the extent of corporate discretionary funds.

Recall that our anticipation alternatively is that managerial options may uniformly and directly influence firm risk taking. Our expectation, therefore, is that option values will be uniformly and indirectly related to discretionary funds. Moreover, as reasoned earlier, the combined effects on firm outcomes of common stock and options may be different than their individual effects, at substantial values of CEO ownership incentives. Hence, the subsequent hypotheses capture our expectations:

- H₆: At low to moderate values of CEO common stock ownership, the value of shareholdings will be negatively associated with discretionary funds, but at substantial values of CEO stock ownership, there will be a positive relationship between the value of shareholdings and discretionary funds (i.e., a U-shaped relationship is expected between stock ownership and discretionary funds).
- H₇: There will be an inverse association between CEOs' option holding values and the extent of corporate discretionary funds.
- H₈: At low to moderate values of CEO common stock ownership, the joint value of stock and options will be negatively associated with corporate discretionary funds, but at substantial values of CEO shareholdings, the joint value of stock and options will be positively associated with discretionary funds.
- H₉: There will be a negative relationship between the joint value of CEO shareholdings-options and discretionary funds.
- H₁₀: At low to moderate values of CEO common stock ownership, the joint value of stock and options will be negatively associated with discretionary funds, but at substantial values of CEO shareholdings, the negative effect of options will negate the positive effect of shareholdings.

Advertising Spending

Shareholders may prefer that resources be allocated to advertising products and services since advertising expenditures have been shown to be related to firm performance in a number of studies (e.g., Aaker, 1991; Bagwell & Ramey, 1994; Jose, Nichols, & Stevens, 1986; Joseph & Richardson, 2002; Kessides, 1986; Robert & Stahl, 1993; Thomas, 1996). In some investigations, it is argued that advertising may increase buyer awareness, boosting demand for the firm's outputs, thereby enhancing scale economies and profitability (Aaker, 1991; Bagwell & Ramey, 1994). In other works, it is proposed that firm performance may improve with advertising because output quality may be stressed via advertising efforts (Peteraf & Shanley, 1994; Thomas, 1995). That is, advertising signals product quality information that buyers otherwise obtain only by experiencing the good. In this context, the argument is that consumers are even more likely to purchase new products that bear familiar brand names associated with perceived quality in response to extensive advertising (Aaker & Keller, 1990; Thomas, 1996). Moreover, consistent with Bloch (1974), Fruhan has argued that advertising

expenditures may “generate economic benefits extending substantially beyond the point in time at which the expenditure occurs” (1979: 35).

Advertising may likewise promote corporate performance since, via advertising, customers tend to become familiar with the firm’s products and services and subsequently locked on to them (Arthur, 1994). Evidently, as customers learn about the product (e.g., DOS versus Macintosh) or service (e.g., where products are located in a particular supermarket, reducing the purchase time), they will be unwilling to switch to competing ones offered by rivals. It has also been proposed that advertising may indirectly upgrade performance because it can act as an effective deterrent to industry entry (Sutton, 1991). With limited potential rivals, firms within an industry may be better able to protect their profit margins (Fudenberg & Tirole, 1983).

Although advertising expenditures may promote performance, enhancing corporate value, we argue that the benefits of advertising programs are not guaranteed. Put in other words, corporate advertising represents present cash outflows but the forthcoming cash inflows associated with the potential contributions of advertising are not certain. To the extent that it is possible that significant sums might be allocated to advertising, but without corresponding financial benefits accruing to the enterprise, advertising spending may contribute to higher corporate risk and downside firm outcomes (Aaker & Jacobson, 1990; Aykac, Corstjens, Gautschi, & Horowitz, 1989; Bigne, 1995).

The premise of existing works is that senior managers who hold negligible stock ownership in their firms may be risk averse. Consequently, these senior managers may be expected to impede advertising efforts in order to lower firm risk and by extension their own personal risk. In the existing literature it is alternatively argued that, with equity ownership, senior executives may become risk prone (Bethel & Liebeskind, 1993; Wruck, 1994). Accordingly, the implication may be that these owner-managers would be expected to promote firm advertising, with increased managerial equity stakes, continuously enhancing the level of advertising spending.

We contend that where executive stock positions are not overinvested in their firms, they may adopt risk-enhancing strategies, such as the adoption of more expansive advertising programs. The reason is that advertising programs may prove beneficial, increasing firm value and boosting the worth of CEOs’ equity ownership in their enterprises. In contrast, we argue that where managerial equity stakes are excessive in their firms, CEOs may become risk averse, lowering their predisposition to advertise. Alternatively, we expect executive option values may uniformly and directly impact corporate risk taking. Hence, CEO option values may consistently and positively influence advertising spending. Furthermore, our anticipation is that the combined effects on corporate outcomes of common stock and options may differ from their individual effects, at substantial values of CEO ownership incentives. Therefore, we offer our final hypotheses:

- H₁₁: At low to moderate values of CEO common stock ownership, the value of shareholdings will be positively associated with corporate advertising spending, but at substantial values of CEO stock ownership, there will be a

negative relationship between the value of shareholdings and advertising spending (i.e., an inverted U-shaped relationship is expected between stock ownership and advertising spending).

- H₁₂: There will be a direct association between CEOs' option holding values and corporate advertising expenditures.
- H₁₃: At low to moderate values of CEO common stock ownership, the joint value of stock and options will be positively associated with corporate advertising spending, but at substantial values of CEO shareholdings, there will be a negative relationship between the joint value of stock and options and advertising spending.
- H₁₄: There will be a positive relationship between the joint value of CEO shareholding-options and advertising spending.
- H₁₅: At low to moderate values of CEO common stock ownership, the joint value of stock and options will be positively associated with corporate advertising spending, but at substantial values of CEO shareholdings, the positive effect of options will negate the negative effect of shareholdings.

SAMPLE CONSTRUCTION AND METHODOLOGY

Sample

In order to secure a sample of established firms, we initially defined our pool of companies as the 2000 largest firms (by revenues) in the *Compustat* database in 1997. We focused on larger enterprises because our prior experience indicated that the needed data would be more readily available for larger enterprises. Only those enterprises are included for which the needed data could be obtained from the *Compustat* database and *SEC* filings for the years 1997 through 1999. Moreover, only those companies are retained for which CEO ownership data could be gleaned from individual proxy statements. Also, only those firms are included which have had the same CEO for all the three years covered by the study to avoid distortion resulting from CEO turnover.

Furthermore, firms not reporting R&D and advertising data (e.g., service firms such as financial or retail companies) or those with missing data are excluded from the sample. A total of 349 enterprises comprise our final sample. Similar to samples of other studies which have included R&D or advertising spending (Hall, 1998; Kochhar & David, 1996; Thomas, 1995), our sample primarily includes manufacturers. The sample firms represent nine different two-digit SIC codes

ranging from 20 to 59. No single four-digit SIC code accounts for more than five percent of the sample; consequently, our results are not driven by industry specific factors. We performed t-tests for differences in size and performance measures between our sample of firms and all the 2000 largest firms in the *Compustat* database. The results of t-tests do not suggest significant differences, indicating that the firms in the sample reflect the average size and performance characteristics of all the 2000 firms we initially included.

Dependent Variables

Research and development is proxied by each firm's two-year (1998 and 1999) average R&D spending. Advertising is represented as the two-year (1998 and 1999) average of each firm's advertising expenditures. Consistent with Fruhan (1979: 47), discretionary funds are defined as the average of each firm's current assets minus current liabilities and long-term debt for the years 1998 and 1999. Two-year averages are estimated to reduce measurement errors due to random year-to-year fluctuations in resource deployments (Titman & Wessels, 1988).

Independent Variables

Ownership incentives are estimated by valuing the common stocks or options of each CEO. To value common stock, we multiply the number of shares of stock each CEO holds in the firm by the average monthly closing share prices for 1997. We utilized the dollar values of common stock and option holdings. The reason is that one-percent ownership of a \$50 billion corporate entity is probably a lot greater portion of an executive's wealth than one-percent ownership of a \$50 million enterprise. We also remember that where managerial decisions impact dollar returns of enterprises (e.g., perquisite consumption), the appropriate measure is CEOs' percentage ownership but where managerial actions influence firm risk or performance (e.g., resource deployment strategies), the appropriate measure is the dollar holdings in the enterprise (Baker & Hall, 1998; Core & Guay, 1999). Previous works used heuristic approaches (Finkelstein & Boyd, 1998) or different versions of the Black-Scholes (1973) model (Murphy, 1985; Kerr & Kren, 1992) to value options. Because volatility (variance in share prices) is a key issue in our study, we employ the Black-Scholes (1973) model to value options since it better reflects the underlying volatility in the sample firms' share prices versus the various heuristic approaches.

Control Variables

Our dependent variables -- R&D, advertising, and discretionary funds -- may be influenced by factors other than CEO ownership incentives. As a consequence, we included several control variables in our models. The chosen dependent variables may be influenced by firm size; therefore,

we included the natural log form of sales in our models. That is, advertising and R&D activities may be affected by scale economies. Controlling for size may also be desirable because long-term debt is a component of discretionary funds. Bigger firms can float larger bond offerings, reducing their per unit underwriting costs. The levels of the dependent variables may also be a function of industry characteristics. Hence, we included two-digit SIC code dummy variables to control for industry specificities. The data set contains nine two-digit SIC codes ranging from 20 to 59. Consequently, we constructed eight dummy variables with SIC code 20 serving as the base group. Given that the dependent variables may be influenced by each other, we included in our models examining the determinants of each dependent variable, the others as control variables (e.g., where advertising serves as the dependent variable in the model, discretionary funds and R&D spending are included as control variables).

Share buyback programs may reduce levels of R&D, advertising, or discretionary funds. Thus, we included a dummy variable indicating the existence or absence of an active share buyback program. Such information was obtained from individual 10-K reports (coded 1, if notes to the shareholders' equity portion of the balance sheet indicate actual share repurchases took place in 1997, and 0 if not).

Previous research suggested that institutional investors may impact firm contingencies through their monitoring activities (Wright, Kroll, & Elenkov, 2002). Consequently, we have included in our study activist institutional ownership as a control variable. This variable represents the percentage of each firm's shares owned by those institutional investors that can be defined as independent of corporate management, such as public pension funds, foundations, and endowments, which own at least one percent of a firm's outstanding stock for the year 1997. Additionally, we included total blockholder ownership as of 1997 (individuals, families, groups, or other enterprises with at least five percent ownership stakes) as a control variable. The reason is that blockholders are also expected to positively impact firm contingencies (Kroll, et al., 1997).

Moreover, it has been suggested that independent outside board members may mitigate agency conflicts (Wright et al., 2002). To control for this possibility, we included in our models the percentage of each firm's board membership that is comprised of independent outside board members as of 1997. Consistent with Wright and colleagues (2002), we define independent outside board members as those who are managers of publicly-traded firms (with no business links to the organization on whose board they serve), executives of non-profit institutions, directors serving on multiple boards with no primary employer, venture capitalists, military officers, government officials, or academicians.

The age of the CEO as of 1997 is also included as a control variable. The reason is that the value of CEOs' professional reputations in the managerial labor markets (Fama, 1980) may be of lesser concern to them with age. Finally, we included as a control variable the average return on assets for 1997. We did so because other studies suggested that resource allocations may be influenced by prior performance (Joseph & Richardson, 2002).

Regression Models

Hierarchical regression models are employed to test our hypotheses. In the first model of each of the sets of hierarchical models, we entered the various control variables, along with the CEO option ownership variable. Subsequently, we entered the values of the CEOs' common stock, followed by the squared values of the common stock variable. If our expectation of a non-linear relationship is supportable, then the CEO stock ownership variable should be positively associated with R&D and advertising but negatively associated with discretionary funds. Conversely, in the quadratic equation, the squared values of the CEO stock ownership variable should be negatively associated with R&D and advertising but positively associated with discretionary funds. These associations suggest expectations of inverted U-shaped relationships between stock and R&D or advertising but a U-shaped relationship between stock and discretionary funds (Cohen & Cohen, 1983: 224-227).

Hypotheses H₃, H₄, H₅, H₈, H₉, H₁₀, H₁₃, H₁₄, and H₁₅ anticipate what should be the effects on resource allocations of the combined values of CEO stock and option ownership. The test of these hypotheses requires examining the combined effects of ownership incentives on resource allocations across two categories of CEO stock ownership (low to moderate and moderate to substantial values). Hence, we split our sample into two sets of sub-samples, as prescribed by Priem, Rasheed and Kotulic (1995). One set consists of sub-samples of firms with CEO shareholdings less than the values found at the points of inflection in the inverted U-shaped relationships identified in tests of hypotheses H₁ and H₁₁, while another sub-sample is comprised of enterprises with CEO shareholdings less than the value found at the point of inflection in the U-shaped association identified in the test of hypothesis H₆. The second set consists of sub-samples of firms with CEO stockholdings more than the values found at the points of inflection of the inverted U-shaped associations identified in tests of hypotheses H₁ and H₁₁, while another sub-sample consists of firms with CEO shareholdings greater than the value found at the point of inflection in the U-shaped association identified in the test of hypothesis H₆. The values at the points of inflection are approximately \$52 million, \$48 million, and \$57 million for R&D spending, discretionary funds, and advertising expenditures, respectively. For each sub-sample we regressed the combined CEO stock and option values against each resource allocation variable along with the control variables.

For hypothesis H₃ and H₁₃ to be supportable, a positive relationship between CEO stock and option ownership and resource allocations should result in the low to moderate CEO stock ownership sub-samples, but a negative relationship should result in the substantial stock ownership sub-samples. For hypothesis H₈ to be supportable, a negative association between CEO stock and option ownership and resource deployments should result in the low to moderate CEO stock ownership sub-sample, but a positive association should result in the substantial stock ownership sub-sample. For hypothesis H₄, and H₁₄ to be supportable, a positive relationship between CEO stock and option ownership and resource allocations should result in both low-to-moderate and high CEO ownership sub-samples.

For hypothesis H_9 to be supportable, a negative association between CEO stock and option ownership and resource deployments should result in both sub-samples. For hypothesis H_5 and H_{15} to be supportable, a positive relationship should be found in the low to moderate CEO stock ownership sub-samples, while an insignificant relationship should be found in the substantial CEO stock ownership sub-samples. For hypothesis H_{10} to be supportable, a negative association should be found in the low to moderate CEO stock ownership sub-sample, but an insignificant association should be found in the substantial CEO stock ownership sub-sample.

Since we employed a cross-sectional sample, we estimated our models using ordinary least squares. Because we lagged our three dependent variables, we estimated Durbin-H statistics to test for autocorrelation. The Durbin-H statistics ranged from .233 to 1.324 (all insignificant), indicating autocorrelation is not a problem. Because the CEO stock and option ownership variables may be non-normally distributed, we estimated White's (1980) test for heteroscedasticity. This test resulted in low chi-square statistics, suggesting heteroscedasticity is not a problem in the models.

RESULTS

In Table 1, the means and the standard deviations of the variables used in the regression analyses are reported. Also reported are the results of the correlation analyses. The high correlation between average R&D spending and average advertising spending suggests the possibility of multicollinearity in our regression models. A review of the variance inflation factors, however, revealed that none were higher than 2.24 - - well below 10 which has been suggested as the point at which multicollinearity may be a problem (Freund & Littell, 2000).

In Table 2, the findings of the determinants of resource allocations are presented. The CEO stock ownership variable is significantly and directly related to average R&D spending. The squared value of this variable, however, is significantly but inversely related to R&D spending. Together, these findings support hypothesis H_1 . That is, as the value of CEO stock ownership is expanded from negligible to moderate levels, this value is positively associated with corporate R&D spending, but as stock ownership further rises to substantial levels, there is an inverse relationship between the ownership variable and R&D spending. Taking the first derivative of the model with respect to CEO stock ownership, and solving for the CEO stock ownership value at the point of inflection, we find that the value of such ownership is approximately \$52 million. The results also support hypotheses H_2 . The relationship between CEO option values and R&D are significant and positive.

The results of the determinants of average discretionary funds are also shown in Table 2. The CEO stock ownership variable is significantly and negatively associated with discretionary funds. The squared value of the managerial stock ownership variable, however, is positively associated with discretionary funds. These findings are supportive of hypothesis H_6 . As the value of the CEO's stock ownership in the firm is expanded from negligible to moderate levels, this value is inversely related to the extent of corporate discretionary funds, but as the value further rises to substantial levels, there

is a direct relationship between such ownership and the extent of corporate discretionary funds. The estimated value of CEO common stock ownership at the point of inflection is approximately \$48 million. The results also provide support for hypothesis H₇ - - there is a significantly negative relationship between CEO option values and discretionary funds.

Table 1: Summary Statistics and Correlations^a

Variables*	Mean	Std. Dev.	1	2	3	4	5	6	7
1. Average R&D Spending	212.72	405.84							
2. Avg Discretionary Funds	78.34	1312.31	.148						
3. Avg Advertising Spending	172.72	251.98	.684	.218					
4. Value of CEO Options	3642.02	4960.32	.283	-.157	.351				
5. Value CEO Stock Ownrship	43289.61	57204.08	.201	-.206	.240	.239			
6. Log of Sales	4.66	2.54	.307	.122	.197	.290	.261		
7. Share Buy-Back Program	29.80	45.79	-.088	.061	-.070	-.069	-.071	.097	
8. Institutional Ownership	19.33	15.55	19.47	-.168	.249	.108	.049	.062	.062
9. Blockholder Investments	18.02	16.06	19.72	-.145	.212	.156	-.129	.017	.087
10. Outside Board Membership	59.40	21.74	.178	-.179	.159	.177	.099	.048	.039
11. Prior Years' ROA	.74	15.96	.194	.201	.271	.136	.084	.107	.145
12. CEO Age	53.29	9.38	.014	.036	.064	.038	-.125	.052	.025
^a N=349; Correlations greater than .10 are significant at .05, while correlations greater than .13 are significant at .01. [*] R&D spending, discretionary funds and advertising spending are in millions of dollars. CEO ownership of stock and options are in thousands of dollars, sales are reported in natural log form, while CEO age is in years. Share buy back is a dummy variable. All other variables are in percentage form.									
		8	9	10	11				
	9.	-.182							
	10	.156	.051						
	11	.086	.108	.119					
	12	-.029	.007	.014	-.034				

Also presented in Table 2 are the determinants of advertising expenditures. The managerial stock ownership variable is positively related to advertising spending. The squared value of CEO stock ownership alternatively is negatively associated with the advertising variable. Hence, hypothesis H₁₁ is supported. As the value of CEO common stock is expanded from negligible to moderate levels, this value is positively associated with corporate advertising, but as the stock value further rises to substantial levels, there is an inverse relationship between managerial ownership and advertising expenditures. The estimated value of CEO common stock ownership at the point of

inflection is approximately \$57 million. The relationship between CEO option holdings and advertising spending is significant and positive, supporting hypothesis H₁₂.

The control variables related to corporate governance (institutional investments, independent outside board members, blockholder investments) are significantly related to the dependent variables as is prior-period performance. Two control variables (the presence or absence of a share buyback program and CEO age), however, are not associated with corporate resource allocations. While not reported, the industry control variables generally proved significant.

Variables	Tests of H ₁ and H ₂			Tests of H ₆ and H ₇			Tests of H ₁₁ and H ₁₂		
	Average R&D Spending			Average Discretionary Funds			Average Advertising Spending		
Avg R&D Spending				.439**	.526**	.511**	.414***	.454***	.413***
Avg Discretionary Funds	.064**	.070**	.039**				.033*	.029*	.027*
Avg Advertising Spending	.346***	.329***	.426***	.405*	.434*	.447*			
Log of Sales	11.819**	10.768	10.077**	67.299*	62.702*	62.124*	19.775*	16.970*	15.411*
Share Buy-Back Program	-.275	-.422	-.423	-.447	-.486	-.466	-.391	-.358	-.347
Institutional Ownership	3.833*	2.461*	3.201*	-9.873**	-11.965***	-13.222***	3.008*	3.212**	3.365***
Blockholder Investments	3.114*	2.823*	2.818*	-8.544*	-8.729**	-8.572*	2.682*	2.789*	2.996*
Outside Board Membership	3.397***	3.271**	3.212**	-8.470*	-8.251*	-8.310**	1.952*	1.941*	1.912*
Prior Years' ROA	2.587*	2.403*	2.428*	6.762*	6.822*	7.584**	3.124**	2.972**	1.768*
CEO Age	3.616	2.710	2.927	7.898	7.602	7.106	2.205	1.693	1.646
Value of CEO Options	.865**	1.303***	1.280***	-4.264***	-5.606***	-5.621***	1.289***	1.110**	.885**
Value CEO Stock Ownrshp		.694**	.297*		-1.269**	-.636**		.439**	.742***
Value CEO Stock Ownship ²			-.003**			.007*			-.007***
Model F Value	34.82***	40.54***	44.23***	7.40***	9.59***	10.87***	36.32***	41.37***	45.29***
Adjusted R ²	.450	.556	.609	.167	.225	.269	.449	.543	.586
Change in R ²		.106***	.053***		.058***	.044***		.094***	.043***

N = 349. * p < .05; ** p < .01; *** p < .001

To test for the possibility of a curvilinear relationship between CEO option holdings and resource allocations, we re-estimated our models and included a squared version of the CEO option holdings variable. Since the quadratic terms are insignificant, we do not report the results. For robustness, we also estimated our models with variance in returns to shareholders as the dependent variable. Although not reported, the findings remain qualitatively the same.

As described earlier, in order to test hypotheses H₃, H₄ and H₅ we split our sample into two subsamples, one representing low-to-moderate CEO stock ownership (below \$52 million) and the other representing higher levels of CEO ownership (above \$52 million). We then regressed the sum of

CEO stock and options against average R&D spending, along with our control variables in each sub-sample. The results are presented in the columns labeled *R&D Spending* in Table 3. Our findings support hypothesis H₅ versus H₃ or H₄, in that they suggest a positive relationship between CEO stock and options ownership and R&D spending at low-to-moderate levels of CEO stock holdings, but no significant relationship is apparent at higher values of CEO stock ownership.

Other results presented in Table 3, in columns labeled *Discretionary Funds*, support hypothesis H₁₀ but not hypotheses H₈ or H₉, in that discretionary funds tend to decline with greater CEO stock and option ownership for the sub-sample consisting of firms with CEO stock holdings ranging from low to moderate levels (i.e., below \$48 million). However, in the sub-sample containing firms with higher levels of CEO stock ownership (i.e., above \$48 million) the relationship between CEO stock and options ownership and discretionary funds is insignificant. Finally, as was the case with R&D spending, advertising spending tends to rise with CEO stock and option ownership where CEO stock holdings are in the low to moderate range (i.e., below \$57 million), but the relationship is insignificant at high values of CEO stock ownership (i.e., above \$57 million), thus supporting hypothesis H₁₅ rather than H₁₃ or H₁₄ (please see columns labeled *Advertising Spending* in Table 3).

Average R&D Spending			.393***	.441***	.272***	.325***
Average Discretionary Funds	.083***	.154***			.0418**	.081**
Avg Advertising Spending	.252***	.362***	.804***	.631**		
Log of Sales	7.500*	11.331*	30.516**	35.516*	10.474*	15.192*
Share Buy-Back Program	-.312	-.427	-.496	-.448	-.329	-.417
Institutional Ownership	2.429**	4.494***	-6.681**	-8.362*	3.503**	4.512***
Blockholder Investments	2.427**	3.926**	-6.723***	-3.722*	1.361**	3.233*
Outside Board Membership	2.094***	2.619**	-3.690*	-7.310**	1.224*	2.356*
Prior Years' ROA	1.409*	1.672*	5.256*	3.502*	1.874*	2.009*
CEO Age	3.339	2.700	4.267	3.266	1.066	2.402
CEO Stock & Opt Ownership	4.474**	-1.187	-5.184***	-2.271	1.433***	.554
Model F Value	25.58***	8.80***	30.88***	12.19***	35.88***	11.43***
Adjusted R ²	.469	.325	.599	.356	.677	.427
*p<.05; **p<.01; ***p<.001 N = 281 N = 68 N = 271 N = 78 N = 284 N = 65						

DISCUSSION, LIMITATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

We focused on changes in firm risk, proxied by resource allocations, as motives for CEO decisions. In the related literature, the assertion has been that CEO decisions may be impacted by their ownership stakes. Furthermore, often the argument has been that there is a uniformly positive association between managerial common stock ownership and beneficial, risk-enhancing executive decisions. The implication of these arguments is that increases in equity ownership will continuously contribute to growth-oriented risk taking activities.

Our anticipation has been where executive common stock ownership is not excessive in the firm, risk-increasing decisions may prevail. In contrast, our expectation has been where CEOs' equity stakes are overinvested in their enterprises, risk-reducing decisions may predominate. The implication of our work is that increases in common stock ownership may be counterproductive at substantial values of such ownership. Hence, in the present study we provided further insights on the divergent motivations that different values of managerial common stock may entail for firm risk taking, proxied by resource allocations. Given our findings, the practice of continuously expanding CEO common stock ownership may be questioned.

We alternatively expected and found that CEO option holding values are directly and uniformly related to corporate risk taking. Hence, on the one hand, our findings are indicative of the benefits of CEO stock ownership incentives, provided the value of managerial equity stakes in the enterprise is not excessive. On the other hand, because CEO option holding values are beneficially associated with resource allocations, our results indicate that granting options may be consistently productive. Moreover, we found that the joint effects on corporate outcomes of common stock and options are similar to their individual effects at low to moderate values of CEO ownership incentives. However, we have shown that the beneficial effects of options negate the detrimental influences of common stock ownership at substantial values of CEO ownership incentives. Nevertheless, emphasis should be made that granting options might not always be desirable. For instance, some CEOs may abuse the privilege of option ownership by inappropriately announcing common stock buy-backs. Although such announcements may positively affect share prices, increasing the value of CEO options, share buy-backs are not always signals of the best use of corporate funds.

Our study entails limitations. Enterprises that produce services often do not report R&D or advertising data. Thus, our results do not represent service firms, such as retailers or financial companies. Smaller enterprises are excluded because less information is available on them. Exclusion of such firms could represent a limitation concerning the generalizability of our findings. Moreover, this study is limiting because our expectations are based on the assumptions we made regarding personal wealth portfolios. Since measuring the personal wealth portfolios of CEOs is difficult on a large scale, we assumed that higher values of executive common stock constitutes greater proportions of their total financial wealth (resulting in personal overinvestment in the firm because all of CEOs' human capital is also invested in the corporation). Additionally, we assumed

that with more limited common stock ownership, CEOs may have more diversified personal wealth portfolios. Making these assumptions could also be limitations of our work (rather than actually examining CEO wealth portfolios to determine their diversity).

Future research might focus on these limitations. For instance, a survey approach via a questionnaire may be used to obtain detailed resource allocation information on larger as well as smaller firms in specific industries and to measure CEO common stock as well as option ownership incentives as in actual percentage of personal wealth portfolios. Further insights into the issues that we explored could be provided by a survey approach. Alternatively, these issues may be explored via case studies of a few firms whose executives would be willing to provide extensive information. In this way, the impact of CEO ownership incentives on firm risk taking proxied by resource allocation choices may be more explicitly examined.

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END-USER COMPUTING STRATEGY: AN EXAMINATION OF ITS IMPACT ON END-USER SATISFACTION

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ABSTRACT

Organizational attitudes and expectations regarding end-user computing (EUC) have changed radically in the past 25 years and have researchers describing end-user computing as a vital component of the overall information resource in the organization. Throughout this period of unprecedented growth from limited desktop computing to near-saturation desktop and mobile EUC, companies have struggled to formulate appropriate EUC strategy and researchers have suggested that the development of an effective EUC strategy "may be the most important short-term decision the organization can make if it hopes to benefit from its investments in end-user-based technologies" (Alavi, M., Nelson, R. R., and Weiss, I. R., 1987-88, p. 29). Using the EUC Strategy Grid proposed by Munro, Huff, and Moore (1987-88), this research explores the issue of EUC management by examining (1) the relationship between EUC strategy and end-user satisfaction, and (2) the influence of end-user satisfaction with organizational satisfaction. The results indicate that organizations can increase the level of satisfaction of employees engaged in EUC activities by adopting an EUC strategy high in expansion tactics and that the level of dissatisfaction experienced by higher-level end-users can be decreased by avoiding or modifying the containment EUC strategy, characterized by high control and low expansion. Additionally, the EUC strategy can be expected to have a positive influence on user behavior.

INTRODUCTION

Organizational attitudes and expectations regarding end-user computing (EUC) have changed radically in the past 25 years. Initially, EUC was perceived as a departmental-level management issue for MIS. From 1982 until 1991, MIS managers consistently ranked "the facilitation and management of end-user computing" in their lists of top twenty issues (Ball and Harris, 1982; Dickson, G. W., Leitheiser, R. L., Wetherbe, J. C., and Nechis, M., 1984; Brancheau and Wetherbe, 1987; Niederman, F., Brancheau, J. C., and Wetherbe, J. C., 1991). During that same period, as large numbers of organizations made the transition from centralized mainframe technology to decentralized desktop

technology, spending for end-user computing in some organizations increased from between 40% and 50% of the computing resources (Rockart and Flannery, 1983) to between 60% and 80% of the IT budget (Amoroso and Cheney, 1991). In less than 10 years, however, EUC had spread so broadly throughout most organizations that it could no longer be considered a management issue solely for MIS managers (Reed, 1989). In 1992, research by Harrison and Rainer confirmed that end-user computing had emerged as a vital component of the overall information resource in the organization. EUC in some organizations was consuming nearly 90% of the computing resources (Amoroso and Cheney, 1992). Increased funding translated to greater numbers of end-users. In a 1994 survey, Nord and Nord found that 98% of those interviewed used a computer in their jobs. Today, end-user computing is part and parcel of the work place; moreover, EUC is now expanding beyond the confines of the office. One writer recently used the term “explosion” to describe the ever growing number of end-users, freed from their desktops by wireless connectivity, engaged in mobile EUC activities (Saran, 2006).

From the beginning, end-user computing has changed the way people worked, improving the collection and organization of data, and allowing them to focus on their basic job responsibilities. At first, early organizational expectations for EUC were primarily to expedite the entry of data into the organization’s centralized mainframe system and to facilitate personal productivity by providing mostly word processing and/or spreadsheet application software on the desktop. By 1990, Boyer suggested that the organization had to achieve a better understanding of end-user computing because it presented such important advantages and disadvantages in areas of time, cost, and quality. Today, in their fast-paced, global environment, businesses actively seek employees with increased technical skills and knowledge, and expect these end-users to utilize the technology for the maximum benefit to the organization (Jawahar and Elango, 2001).

Throughout this period of unprecedented growth in end-user computing, from limited desktop computing to near-saturation desktop and mobile EUC, companies have struggled to formulate appropriate EUC strategy. As early as 1983, while studying the status of end-user computing in corporate America, Rockart and Flannery were surprised to find that the organizations participating in their study did not have a strategy for the management of EUC. The authors suggested that organizations would be required to establish appropriate strategies for the development and management of EUC if they were to take advantage of its immense potential. Since that study, other researchers have suggested that the development of an effective EUC strategy "may be the most important short-term decision the organization can make if it hopes to benefit from its investments in end-user-based technologies" (Alavi, M., Nelson, R. R., and Weiss, I. R., 1987-88, p. 29). A study conducted under the auspices of The Institute of Internal Auditors Research Foundation revealed that only 31 percent of the organizations surveyed had developed their end-user computing in a systematic fashion (Rittenberg and Senn, 1993). In a commentary appearing in *Computerworld* in 1995, de Jager stated that companies had little to show in the way of increased productivity for the billions of dollars being spent annually on computers, and that the fault rested with the management (or lack thereof)

of end-user computing. Reminiscent of Rockart and Flannery's (1983) findings, de Jager (1995) found that most businesses still had no formal EUC policies, guidelines, or audit procedures to monitor the productivity of their EUC resource.

Rockart and Flannery (1983) recommended that EUC strategy be clearly defined for and between the MIS staff and the end-user community, and that the strategy defined should emphasize the development and management of an environment shared by MIS professionals and end-users. They also suggested that new corporate policies pertaining to such areas as system cost justification and software procurement and development be formulated. History has proven these suggestions to be sound. Today, end-user computing is evolving into end-user development (EUD), which can be a source of either "covert" end-user activity (Ferney, 2007) or a *bone fide* application software acquisition alternative for the organization (Martin, E. Wainright; Brown, Carol; DeHayes, Daniel; Hoffer, Jeffrey; and Perkins, William., 2005). Effective strategic planning and responsible information resource management now demand that businesses have an "explicit" end-user computing strategy (Martin et. al., 2005).

Building on the findings and recommendations of Rockart and Flannery, Munro, Huff, and Moore (1987-88) presented a model of organizational EUC strategy defined along two dimensions: expansion and control. The *expansion* dimension deals with the level of encouragement or support provided by the organization to end-users to increase EUC. The *control* dimension deals with the extent of limitations or restrictions placed on end-users by the organization to restrain EUC. The Strategy Grid is shown in Figure 1. Since the identification of Munro et al.'s (1987-88) EUC strategies, no research has been located which further investigates EUC management in terms of these two dimensions, although the model continues to be presented in texts as a guide to end-user computer strategy (Martin et. al., 2005).

Figure 1
EUC Strategy Grid (Munro et al., 1987-88)

		High	Acceleration	Controlled Growth
		Low	Laissez-faire	Containment
EXPANSION			Low	High
			CONTROL	

Using the EUC Strategy Grid proposed by Munro et al., this research explores the issue of EUC management by examining (1) the relationship between EUC strategy and end-user satisfaction, and (2) the influence of end-user satisfaction with organizational satisfaction.

LITERATURE REVIEW

End-Users and End-User Computing

A review of the literature yields several definitions for “end-user.” Cotterman and Kumar (1989) narrowly define end-users as people who interact with computer-based information systems only as consumers of information. Turban's (1993) definition, on the other hand, is much broader and includes all managers and professionals using PCs, secretaries using word processing, and CEOs using e-mail. Turban (1993) suggests that the end-user can be at any level in the organization or in any functional area. The research presented here uses the broadest possible definition of end-user to include not only consumers of information, but anyone in the organization who directly uses a computer in the performance of his or her job. MIS professionals (i.e., systems analysts, programmer/analysts, and programmers) are **excluded** from this definition.

A variety of definitions for “end-user computing” have also appeared in the literature. Rockart and Flannery (1983) very simply define end-user computing as computing developed and operated by the user. Turban (1993) defines end-user computing as the development and use of computer-based information systems by people outside the formal IS areas. The definition adopted for this study has been advanced by several authors who define end-user computing as the *direct, hands-on use of computers by anyone in the organization with problems for which computer-based solutions are appropriate* (Hackathorn and Keen, 1981; Carr, 1987; Doll and Torkzadeh, 1988).

End-user Satisfaction

DeLone and McLean (1992) suggest that the evaluation of information systems (IS) practices, policies, and procedures requires an IS success measure against which various strategies can be tested, and they identify user satisfaction as one of the six major dimensions or categories of IS success. In their investigation of 100 empirical studies examining some aspect of IS success, DeLone and McLean (1992) found 33 studies which used user satisfaction as the measure of IS success. The authors state that user satisfaction is probably the most widely used single measure of IS success for three reasons. First, user satisfaction has a high degree of face validity; it is hard to deny the success of a system which its users say that they like. Second, reliable instruments have been developed to measure user satisfaction and to allow the comparison of results among studies. Third, most of the other measures (i.e., system quality, information quality, use, individual impact, and organizational

impact) are poor; that is to say, they are either conceptually weak or empirically difficult to obtain. Raymond (1987) suggests that user satisfaction is the **best** assessment of system success.

Numerous studies are available linking some aspect of EUC and end-user satisfaction. Rushinek and Rushinek (1986) report over 4,500 end-users' satisfaction with 17 specific system characteristics. Bergeron and Berube (1988) studied end-user satisfaction with various forms of support and management of the EUC environment. They found that end-users were more satisfied with their microcomputing activities when (1) the organizational microcomputing plan was incorporated in the information systems master plan, (2) there was an information center to support end-user activity, and (3) users had access to a hot-line to solve their microcomputing problems. Igbaria and Nachman (1990) made an exploratory study of correlates of end-user satisfaction with end-user computing. They found that significant positive relationships existed between end-user satisfaction and hardware/software accessibility and availability, computer background of users, user attitudes toward end-user computing, and system utilization. Their results also demonstrated that computer anxiety and user age were negatively related with end-user satisfaction. No significant relationships were found between end-user satisfaction and gender, education, and organizational level. Bergeron, Rivard, and DeSerre (1990) found that specific characteristics of an Information Center (IC) resulted in higher levels of end-user satisfaction. They found that end-user satisfaction increases with the variety of services offered by the IC, the proximity of the IC, and the proportion of the IS budget devoted to the IC. Similarly, Mirani and King (1994) found that end-user satisfaction was higher when information centers provided support that fulfilled more of the users' needs. Shaw et al. (2003) conducted a study which showed that satisfied and dissatisfied end-users have "different technological frames of reference" towards EUC which affect their expectations of the technology, their interactions with the information center support staff, and their utilization of the technology. Aladwani (2002) conducted a field study to investigate the relationship among organizational actions, computer attitudes, and end-user satisfaction, and found that top management advocacy of end-user computing positively influences end-user satisfaction in public organizations.

Measuring End-User Satisfaction

Methodologically, the measurement of user satisfaction is a problem crucial to information systems research, and user satisfaction has been operationalized in many different ways. Scales developed for the measurement of user satisfaction generally fall into two categories: those which focus on the content of the information system or "the product," and those which include the organizational support for developing and maintaining the system as well as the system product itself (Ives, B., Olson, M. H., and Baroudi, J. J., 1983). Of the 33 studies included in the meta-analysis reported by DeLone and McLean (1992), six studies used the Bailey-Pearson (1983) instrument, nine studies used other multi-item scales, and 13 studies (over one-third of all the studies cited) used a single question about overall user satisfaction. Other studies have employed single-item rating scales

(Edmundson and Jeffery, 1984; Hogue, 1987; King and Epstein, 1983; Langle et al., 1984). Many of the more popular measures of end-user satisfaction focus on end-user satisfaction with individual systems and are unsuitable to assess EUC success from a company-wide perspective (Guimaraes and Igbaria, 1994). Since overall ratings of user satisfaction have proven just as effective as multi-item scales (Rushinek and Rushinek, 1986; Rivard and Huff, 1988), and since the research presented here is neither concerned with user information satisfaction nor end-user satisfaction with a particular application, an overall rating of satisfaction with the EUC strategy seems most appropriate.

End-User Computing Strategy

During the early period of EUC strategy research, some authors narrowly defined EUC strategy only in terms of risks associated with the development of software by end-users, and suggested specific EUC policies enumerating particular tactics to control risks of end-user development (Alavi and Weiss, 1986; Davis and Olson, 1985; Leitheiser and Wetherbe, 1986). In more general terms, however, EUC strategy consists of all processes and approaches adopted by an organization for identifying, assessing, and assimilating end-user technologies into the organization (Alavi et al., 1987-88). EUC strategy is implemented and operationalized through policies and procedures dealing with such critical EUC management issues as resources procurement, application development by users, decentralized support services, and control through line management (Kahn, 1992).

Three major models of EUC strategy are proposed in MIS literature (Alavi et al., 1987-88; Henderson and Treacy, 1986; Munro et al., 1987-88). Brown and Bostrom (1989) characterize all three of these models as evolutionary because they are "based on the assumption that the organization's EUC strategy should change over time to match the stage of EUC assimilation within the given organization (p. 80)."

Henderson and Treacy (1986) propose a four-stage model for the management of end-user computing. Their model is prescriptive in nature, based on prior literature and not specific field data. The four stages in the Henderson-Treacy (1986) model are Implementation, Marketing, Operations, and Economic. The authors, assuming that the organization's overall EUC management objective is to maximize the rate of EUC diffusion, suggest that each stage of EUC management requires its own particular structure and set of control mechanisms.

Taking a descriptive research approach based on their study of 47 different organizations, Munro et al. (1987-88) propose a model of four EUC strategies established along two dimensions, expansion and control. Expansion is the rate or pace of EUC growth and development in the organization. Control refers to actions taken to direct the activities and choices made by users. The authors contend that organizational EUC strategy directly affects the rate of diffusion of EUC technologies and the outcomes of EUC activities within the organization. They further suggest that the end-user computing strategy finally selected by an organization reflects which dimension (expansion or control) is more dominant in the organization. A strategy dominated by control results

in slow diffusion and limited application of end-user computing, while a strategy dominated by expansion results in rapid diffusion and widespread application of end-user computing.

Munro et al. emphasize that the EUC strategy adopted by an organization has important implications on not only the scope of EUC activities in the organization, but also on the resource requirements. They suggest that the strategy choice made by the organization is influenced by such factors as internal conditions of the firm, observations of the growth patterns of user computing in other firms, and the attitudes of top management. As shown in Figure 1, this model depicts four possible EUC strategies formed when the two dimensions of EUC strategy (control and expansion), each on a scale of low to high, are crossed to form a matrix. The four EUC strategies are defined as follows:

1. *Laissez-faire*: Laissez-faire, in its extreme, is the "opening position" for most firms, one in which the organization's interest in end-user computing is low; hence there is no particular drive to increase the amount of EUC in place. Since there is little user computing under way, the need for controls, that is, limitations on EUC choices, is low. Thus, the organization is assuming a "hands-off" posture with respect to EUC.
2. *Acceleration*: In the Acceleration cell, the firm has decided that it will provide abundant resources for end-user computing but has little concern as to the direction in which EUC will go. The concern is rather to enable each user to have the best possible opportunity to make his or her own decisions regarding solutions for the problems being addressed.
3. *Containment*: For an organization in the Containment cell, management has decided to develop end-user computing slowly and carefully. The intention is to expand at a low rate and to ensure that the increase in EUC is done in such a way as to remain within precise and narrow growth boundaries defined by the EUC support group or information systems department. Very specific controls are in place and users are required to carry out their computing activities within the limited range of choices these controls permit.
4. *Controlled Growth*: In the Controlled Growth cell, the organization has chosen to develop end-user computing rapidly, but simultaneously to control carefully the environment in which it occurs. Hence, ample resources are provided to ensure that EUC does in fact take hold and that it is encouraged and well supported. However, at the same time, appropriate controls are in place to

ensure that the growth of end-user computing conforms to management's explicit desires.

The third evolutionary model of EUC strategy is proposed by Alavi et al. (1987-88) and is based on their interviews with five companies. Their model seems to "merge" the two models discussed above by profiling five EUC strategies: laissez-faire, acceleration, monopolist, marketing, and operations-based. The first four strategies correspond with Munro et al.'s (1987-88) laissez-faire strategy, acceleration strategy, containment strategy, and controlled growth strategy respectively. The fifth strategy, operations-based, is included as an "on-going management" strategy (p. 32). In this model, the five core strategies are described in terms of an EUC management framework of policy setting, planning, support, and control similar to Munro et al.'s expansion and control framework. Like Henderson and Treacy (1986), Alavi et al. assume that an organization's EUC objective in the early stages of their EUC evolution is to maximize the rate of EUC growth.

The model of EUC strategy described by Munro et al. (1987-88) is utilized in this study for several reasons. First, it is based on the largest sample of organizations (i.e., 47). Second, it is the most parsimonious; the two stages (i.e., marketing and operations-based) substituted in the Alavi et al. (1987-88) model for the one controlled growth stage in the Munro et al. (1987-88) model addresses concern for specifying an additional EUC growth stage, not a different strategy. Finally, in their research, Munro et al. developed composite expansion and control indices to provide an objective mechanism for placing the organizations studied into the expansion-control grid. Unfortunately, although significant research concerning the management of EUC has been conducted since the development of the EUC strategy grid by Munro et al. (1987-88), no subsequent empirical research could be found which confirms this model.

Generally speaking, this research studies the relationship between EUC strategy and end-user satisfaction, and asserts that EUC strategy has an influence on end-user satisfaction, and that end-users' overall satisfaction with the organization is influenced by their satisfaction with the organization's EUC strategy. Specifically:

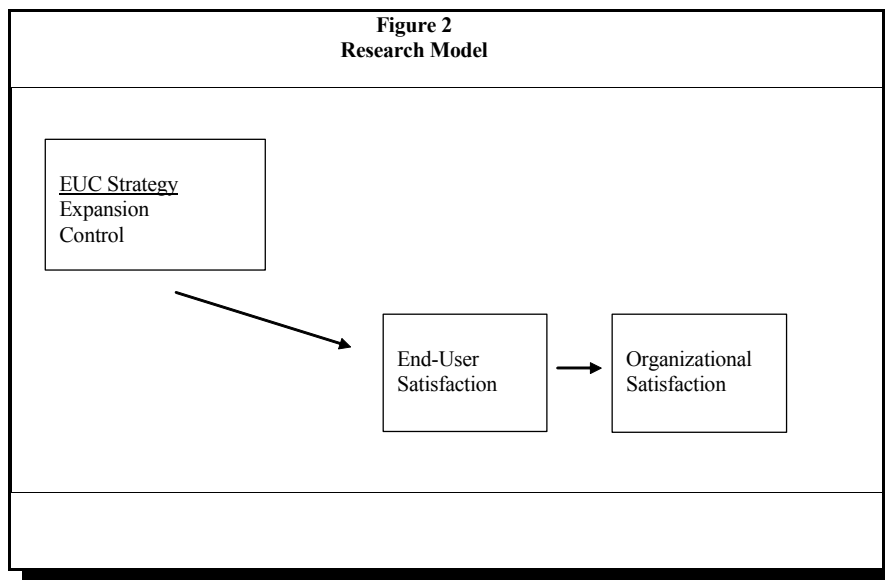
- H1: End-user satisfaction will be higher for EUC strategies characterized by low control than for EUC strategies characterized by high control.
- H2: End-user satisfaction will be higher for EUC strategies characterized by high expansion than for EUC strategies characterized by low expansion.
- H3: End-users' overall satisfaction with the organization is influenced by their satisfaction with the organization's EUC strategy.

Hypotheses 1 and 3 are suggested by Spector's (1986) findings that employees who perceive themselves as having comparatively high levels of control over their work are more satisfied, involved, committed, and motivated. Hypothesis 1 is also supported by Bergeron and Berube's (1988) suggestion that an increase in the number of policies lowers end-user satisfaction with microcomputing because end-users see policies as restrictions in their work. Hypothesis 2 and 3 are suggested by Igbaria and Nachman's (1990) study which found that significant positive relationships existed between user satisfaction and such high expansion tactics as (1) hardware/software accessibility and availability and (2) system utilization.

This research presumes (1) that EUC strategy affects end-users' reactions to their work environment as evidenced by their satisfaction, and (2) that end-users' overall satisfaction with the organization is influenced by their satisfaction with the organization's EUC strategy. The questions investigated by this research are:

1. What is the relationship between EUC strategy and end-user satisfaction?
2. What is the relationship between end-user satisfaction with the EUC strategy and overall satisfaction with the organization?

This research suggests answers to these questions by examining the relationship between EUC strategy and end-user satisfaction in a variety of organizations, and by examining how end-user satisfaction with EUC strategy correlates with overall satisfaction with the organization. Figure 2 depicts the conceptual model utilized in this research.



RESEARCH METHODOLOGY

Research Design

This research is a field experiment investigating the relationship between EUC strategy, end-user satisfaction, and overall organizational satisfaction. In order to operationalize EUC strategy, four EUC strategy scenarios were developed, one for each cell of the strategy grid defined by Munro et al. (1987-88). Development of the scenarios is based on empirical research performed by Munro et al. in which they were able to identify specific expansion and control tactics used by organizations in conjunction with their dominant EUC strategy objective. The four categories of expansion tactics suggested by the authors were:

1. flow of information (high or low) to end-users about computing services and products available;
2. cost to users (high or low) for computing technology, training and support;
3. acquisition of new technology (easy or difficult) by end users; and
4. quality and range of services (high or low) available to end users.

The four control tactics suggested by the authors were:

1. end users are required to buy one specific type of technology or choose technology from an approved vendor list;
2. end users are allowed to only read corporate data files;
3. end users are limited to specific software tools; and
4. MIS has veto power over end-user technology acquisitions.

The scenarios developed for this study incorporate these tactics in different combinations to describe the EUC environment at four hypothetical organizations. After the scenarios were developed, ten faculty members (already knowledgeable with the concept of EUC) at a local college were asked to serve as independent raters, assessing each scenario and assigning it to a cell on the Munro et al. grid. The scenarios were classified with an inter-rater reliability of 100%.

Instrument Design

The first section of the research instrument includes respondent demographics of gender, age, educational level, years in current job, whether or not the current job is a management position, extent of computer use in current job, and number of years the individual has used a computer. The second section includes the four scenarios depicting the four EUC strategies. To reduce bias resulting from the order in which respondents read the scenarios, the four scenarios were presented in the questionnaires in any one of the 24 possible combinations. Approximately equal numbers of questionnaires for each of the 24 different combinations were distributed randomly.

Respondents were asked to imagine that they worked in the organization described and to indicate their satisfaction (1) with the company's rate of expansion and support for EUC (the expansion dimension), (2) with the company's restrictions over EUC activities (the control dimension), (3) with the company's overall policy for EUC, and (4) with the company in general. The 5-point Likert scale ranged from 1 (extremely dissatisfied) to 5 (extremely satisfied).

Sample Selection

Respondents were end-users from 12 Tennessee organizations at all levels of end-user sophistication and in as many functional areas of the organization as possible. Although the respondents were not selected randomly from the population of end-users, the sample is not believed to be significantly biased for several reasons: (1) each respondent is a full-time employee of the company; (2) the respondents are from different types of companies; (3) the respondents within each company represent different functional areas; (4) each respondent is an end-user engaged in some level of EUC activity; and (5) respondents were selected by twelve different individuals.

DATA ANALYSIS

A total of 260 questionnaires were distributed; 153 questionnaires were returned, resulting in a 58.8% overall response rate. Demographically, almost two-thirds (63.4%) of the respondents were female, 58.8% were over the age of 39, 54.3% held a Bachelors Degree or above, and 81% had been using a computer for 5 years or more. 49% of the respondents had held their current job for 5 years or more, 54.2% used their computers more than 20 hours per week, and almost one-third of the respondents (32.7%) had management positions in their organizations.

Table 1 shows the means and standard deviations of the overall satisfaction ratings for the four EUC strategies. In order of mean satisfaction level, the acceleration strategy (LC/HE) received the highest satisfaction rating at 3.9281, and the controlled growth strategy (HC/HE) received the second highest satisfaction rating with a mean of 3.6471. The two strategies characterized by low expansion had the lowest mean satisfaction levels. A simple one-way ANOVA and a Fisher's LSD post hoc test

with significance level set at .05 revealed (1) that the end-users' mean satisfaction with the acceleration strategy is significantly different from their mean satisfaction with each of the other three strategies, and (2) that the end-users' mean satisfaction for the controlled growth strategy is significantly different from their mean satisfaction for both the laissez-faire and the containment strategies. There was no significant difference between end-users' mean satisfaction for laissez-faire and containment.

A Cronbach's alpha coefficient was also computed for each EUC strategy scenario. For acceleration, controlled growth, containment, and laissez-faire, the Cronbach's alpha coefficients were .89, .80, .86 and .87 respectively. These high alphas (all over .70) demonstrate a high level of reliability for the EUC strategy scenarios (Nunnally, 1978).

Table 1: Parametric and Non-Parametric Test Results For Comparison of End-Users' Satisfaction with EUC Strategies Characterized by High Control and EUC Strategies Characterized by Low Control				
t-tests for Paired Samples				
Variable	Number of Pairs	Mean	t-value	2-tail sig.
Satisfaction with High-Control Strategies		2.9379		
Satisfaction with Low-Control Strategies		2.9837		
	153		-.52	.604
Wilcoxon Matched-Pairs Signed-Ranks Test				
Variable	Mean Rank	Sum of Ranks	Cases	
Satisfaction with High-Control Strategies	64.98	3639.0	56	- Ranks
	(low control less than high control)			
Satisfaction with Low-Control Strategies	60.46	4111.0	68	+ Ranks
	(low control greater than high control)			
			29	Ties
	(low control equal to high control)			
			153	Total
Z = -.5973	2-tailed P = .0553			

Parametric and non-parametric statistical tests were used for testing the hypotheses.

Hypothesis 1

Hypothesis 1 is concerned with the main effect of the control dimension of EUC strategy on user satisfaction without regard to the user's EUC activity level; it predicts that end-user satisfaction will be higher for EUC strategies characterized by low control than for EUC strategies characterized by high control. The two EUC strategies found in the low control cells of the strategy grid are laissez-faire, characterized by low control and low expansion (LC/LE), and acceleration, characterized by low control and high expansion (LC/HE). The two EUC strategies found in the high control cells of the strategy grid are containment, characterized by high control and low expansion (HC/LE), and controlled growth, characterized by high control and high expansion (HC/HE). Before Hypothesis 1 could be tested, it was necessary to compute each respondent's average satisfaction rating with the two low control strategies as well as each respondent's average satisfaction rating with the two high control strategies. To test Hypothesis 1, both a paired t-test and a Wilcoxon matched-pairs signed-ranks test were performed comparing the sample mean of respondents' satisfaction with low control strategies with the sample mean of respondents' satisfaction with high control strategies. The results of both tests are shown in Table 2. Both tests failed to reject the null hypothesis; therefore, Hypothesis 1 was not supported.

Table 2: Parametric and Non-Parametric Test Results For Comparison of End-Users' Satisfaction with EUC Strategies Characterized by High Expansion and EUC Strategies Characterized by Low Expansion				
t-tests for Paired Samples-				
Variable	Number of Pairs	Mean	t-value	2-tail sig.
Satisfaction with High-Expansion Strategies		3.7876		
Satisfaction with Low-Expansion Strategies		2.1340		
	153		18.46	.000
Wilcoxon Matched-Pairs Signed-Ranks Test				
Variable	Mean Rank	Sum of Ranks	Cases	
Satisfaction with High-Expansion Strategies	72.01	9722.0	135	- Ranks
	(low control less than high control)			
Satisfaction with Low-Expansion Strategies	29.60	148.00	5	+ Ranks
	(low control greater than high control)			
			13	Ties
	(low control equal to high control)			
			153	Total
Z = -9.9953	2-tailed P = 0000			

Hypothesis 2

Hypothesis 2 is concerned with the main effect of the expansion dimension of EUC strategy on user satisfaction; it predicts that end-user satisfaction will be higher for EUC strategies characterized by high expansion than for EUC strategies characterized by low expansion. The two EUC strategies found in the high expansion cells of the strategy grid are acceleration, characterized by low control and high expansion (LC/HE), and controlled growth, characterized by high control and high expansion (HC/HE). The two EUC strategies found in the low expansion cells of the strategy grid are laissez-faire, characterized by low control and low expansion (LC/LE), and containment, characterized by high control and low expansion (HC/LE). Before Hypothesis 2 could be tested, it was necessary to compute each respondent's average satisfaction rating with the two high expansion strategies as well as each respondent's average satisfaction rating with the two low expansion strategies. To test Hypothesis 2, both a paired t-test and a Wilcoxon matched-pairs signed-ranks test were performed comparing the sample mean of the respondents' satisfaction with high expansion strategies with the sample mean of respondents' satisfaction with low expansion strategies. The results of both tests are shown in Table 3. With p-values of .000 and .0000 respectively, both tests rejected the null hypothesis; Hypothesis 2 was supported.

EUC Strategy		Mean	Standard Deviation
Acceleration	Low Control/ High Expansion	3.9281	1.0072
Controlled Growth	High Control/ High Expansion	3.6471	1.0789
Containment	High Control/ Low Expansion	2.2288	.9767
Laissez-faire	Low Control/ Low Expansion	2.0392	.9168

Hypothesis 3

Hypothesis 3 predicts a strong association between end-user satisfaction with the organization's EUC strategy and overall end-user satisfaction with the organization in general. To test Hypothesis 3, a Pearson's product moment correlation analysis was performed comparing end-user satisfaction with the EUC strategy in an organization with end-user satisfaction for the organization. A strong correlation, .9022 ($p = .000$) rejected the null hypothesis; therefore, Hypothesis 3 was supported.

DISCUSSION

This research empirically investigates the relationship between EUC strategy and end-user satisfaction, and the influence of end-user satisfaction on overall organizational satisfaction. Generally, the study expected to find high levels of end-user satisfaction associated with EUC strategies characterized by low control and with EUC strategies characterized by high expansion. Also, the study expected to find that end-users' overall satisfaction with the organization would correlate with their overall satisfaction with the EUC strategy. Figure 3 summarizes the results of the respondents' end-user satisfaction ratings with the four EUC strategy scenarios developed for this research by placing the end-user satisfaction sample means previously reported in Table 1 on the EUC strategy grid previously presented in Figure 1.

Figure 3
End-User Satisfaction with EUC Strategy

		EXPANSION	
		High	Low
High	Acceleration 3.9281	Controlled Growth 3.6471	
	Laissez-faire 2.0392	Containment 2.2288	
		Low	High
CONTROL			

Hypothesis 1 had predicted that end-user satisfaction would be higher for EUC strategies characterized by low control (i.e., laissez-faire and acceleration) than for EUC strategies characterized by high control (i.e., containment and controlled growth); however, this hypothesis was not supported by the data. Respondents reported their highest overall levels of satisfaction with the two high expansion EUC strategies (i.e., acceleration and controlled growth), and their lowest overall levels of satisfaction with the two strategies characterized by low expansion (i.e., laissez-faire and containment). Respondents' greater dissatisfaction with the low expansion strategies seems to outweigh their great satisfaction with the low-control acceleration strategy. A review of job satisfaction literature indicates that important factors contributing to job satisfaction include mentally challenging work, equitable rewards, supportive working conditions, and supportive colleagues (Robbins, 1991). Employees are concerned with the work environment not only for their personal comfort, but also for doing a good job; this concern includes having adequate tools and equipment (Robbins, 1991). The level of expansion (i.e., high or low) present in the EUC strategy adopted by

an organization impacts the amount of organizational resources available for end-user support and training, as well as the acquisition of new hardware and software technologies as they become available. Literature also suggests that an organization's policies can contribute to explaining and predicting employees' attitudes and behavior to the extent that those policies reduce employees' ambiguity and clarify their understanding of what they are supposed to do and how they are supposed to do it (Spector, 1994). Satisfaction increases when employees experience greater certainty about future directions and outcomes of the organization (Zeffane, 1994). The laissez-faire EUC strategy was described to the respondents in this study as one in which the organization's overall interest in end-user computing was low and in which the organization's commitment of resources to EUC was small. The containment EUC strategy was described as one in which the organization's desire was to move slowly and carefully. In response, end-users in this study indicated their lowest level of satisfaction with these two low expansion EUC environments. The effect of the low level of the control dimension in the laissez-faire strategy was apparently lost in the negativity of this overall low expansion, unsupportive and uncertain EUC environment.

As predicted by Hypothesis 2, end-user satisfaction is significantly higher for EUC strategies characterized by high expansion than for EUC strategies characterized by low expansion. This finding supports an earlier study which found significant positive relationships between user satisfaction and such specific high expansion tactics as (1) hardware/software accessibility and availability and (2) system utilization (Igarria and Nachman, 1990).

Taken together, the fact that Hypothesis 1 was not supported and the fact that Hypothesis 2 was supported seem to suggest that the expansion dimension has a stronger influence on end-user satisfaction than the control dimension. This may be partially explained by the findings of the well-known obedience to authority experiments conducted at Yale in the early 1960s which concluded that when people are placed in a subordinate role, most relinquish their individual control and defer to the authority structure in place (Milgram, 1963). Since employees relinquish much of their individual control to the organizational authority structure when they accept employment (Rigg, 1992), perhaps their satisfaction with the EUC environment is less influenced by the control dimension of EUC strategy than by the expansion dimension.

As predicted by Hypothesis 3, end-users' overall satisfaction with the organization is influenced by their satisfaction with the organization's EUC strategy. As end-users' level of satisfaction with the organization's EUC strategy increases, their level of overall satisfaction with the organization increases. Since an organization's EUC strategy involves aspects of both control (e.g., restricting end-users and EUC activity) and expansion (e.g., providing resources for EUC activity), this finding is consistent with other studies which investigated employees' satisfaction as influenced by their perception of organizational control and organizational support. Spector (1986) found that employees who perceive themselves as having comparatively high levels of control over their work are more satisfied, involved, committed, and motivated. Igarria and Nachman (1990) found that significant positive relationships existed between end-user employees' satisfaction and such high expansion

tactics as (1) hardware/software accessibility and availability and (2) system utilization. Since respondents in this study had significantly higher levels of satisfaction with EUC strategies characterized by high expansion than with EUC strategies characterized by low expansion, it is not surprising that their overall satisfaction with the company would be influenced correspondingly.

IMPLICATIONS FOR PRACTICE AND RESEARCH

This research is of interest to both academicians and practitioners. It builds on past EUC research by utilizing the Munro et al. (1987-88) model of EUC strategy in empirical research. It extends the original study by operationalizing the EUC strategies defined by Munro et al. (1987-88) through the development of four scenarios describing the EUC environment in terms of specific, relevant organizational tactics identified in that same research. For academicians, this research fills knowledge gaps about end-user computing and end-user satisfaction by examining the relationship between EUC strategy and end-user satisfaction. For practitioners faced with the decision of choosing and implementing EUC strategy in their organizations, this research offers insight into the identification of successful EUC strategies. The research does not suggest a particular EUC strategy for a particular organization; rather, this research increases our understanding of the impact of EUC strategy on end-users. The results of this study hold several important suggestions for organizational policy making related to EUC activities which could lead to increased end-user satisfaction. First, organizations can increase the level of satisfaction of employees engaged in EUC activities by adopting an EUC strategy high in expansion tactics. Second, organizations can decrease the level of dissatisfaction experienced by higher-level end-users by avoiding or modifying the containment EUC strategy, characterized by high control and low expansion. Based on a study by Gatian (1994) which indicates that a relationship does exist between user satisfaction and user behavior, EUC strategy which increases user satisfaction (or conversely, which decreases user dissatisfaction) can be expected to have a positive influence on user behavior.

The results of this study suggest several opportunities for further research. The research model could be expanded to include other individual characteristics as moderating variables on the relationship between EUC strategy and end-user satisfaction. For example, need-fulfillment theories of job satisfaction generally assume that individuals differ in the outcomes they prefer (or need) to obtain from their jobs, and hypothesize that the relationship between the outcomes received on the job and satisfaction is dependent upon these preferences or needs (Graen, G. B., Dawis, R. V., and Weiss, D. J., 1968). The model could also be expanded to include other job-related factors as moderating variables on the relationship between EUC strategy and end-user satisfaction. Review of management literature reveals an enduring and well-established stream of research on factors contributing to job satisfaction and job dissatisfaction. For example, one study suggests that certain job dimensions (i.e., achievement, responsibility, and recognition) are more important for both satisfaction and dissatisfaction than certain other job dimensions (i.e., working conditions, company

policies and practices, and security) (Dunnette, M. D., Campbell, J. P., and Hakel, M. D., 1967). Another study suggests an interaction between end-user computing levels, job motivation, and job satisfaction (Barker, 1995).

CONCLUSIONS

Because end-user computing holds both significant advantages and significant risks for the organization, there is an increased need for organizational EUC strategy. As the level of organizational EUC activities continues to grow, so does the need for EUC strategies containing both elements of control (i.e., acquisition policies and procedures, end-user access to the corporate database, sharing of resources, and quality of systems and information) and expansion (i.e., end-user support and training, and hardware and software availability). Finally, this research suggests that the EUC strategy utilized by the organization not only affects end-user satisfaction but overall satisfaction with the organization. Based on a study by Gatian (1994) which indicates that a relationship does exist between user satisfaction and user behavior, EUC strategy which increases end-user satisfaction (or conversely, which decreases end-user dissatisfaction) can be expected to have a positive influence on end-user behavior.

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JOURNEY TO THE NORTH FACE: A GUIDE TO BUSINESS TRANSFORMATION

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ABSTRACT

Organizations increasingly chose to adopt lean enterprise strategies but implementing strategy is a difficult task, prone to failure. Transforming our businesses into a new model, one that removes non-value added activities, requires a three-phase transformation: a cultural transformation, implementing lean tools, and extending lean principles into the value stream outside the business. This paper focuses on the first two aspects of the transformation. In moving an enterprise to lean, leading the change must come from the top but other leaders must also be present. Change leaders at the business unit level, called Transformangers, and plant level implementers, called "Lean Berets," provide the skills, knowledge, and involvement to implement lean systems throughout the organization. Supporting mechanisms, such as unwavering sponsorship from the top, a clearly articulated vision, and alignment of all employees are other necessary components for successful lean transformations. Organizational structures that support teams, and organizational linkages that cut across functional boundaries must be implemented. Finally, the importance of extensive training and dedicated resources is stressed and a recommended training program is presented. Such a commitment of resources to the training effort recognizes that people are as important as equipment, tools, and processes in implementing a lean transformation strategy.

INTRODUCTION

We live in a world where information has become the dominant value driver, where markets and competition are global, and where rocketing IPO's, mega-mergers, and predatory acquisitions are changing both the business landscape and its clock speed forever. The last fifteen years of unprecedented prosperity have created amazing growth, along with a troubling level of complacency and expectation for its continuance; yet we all know that no tree grows to heaven. Likewise, we know that the management systems we currently use to run our businesses will not be adequate for creating ever-increasing stakeholder value in a declining market. In the face of such challenges, many organizations are adopting a lean enterprise strategy. Yet, implementing a strategy, particularly one that demands major change at all levels of the firm and within its culture, is difficult and prone to failure. For that reason, it is imperative to take a fresh look at how to transform our businesses into the new lean enterprise model

TRANSFORMATION

Business transformation moves an organization from an existing condition to a future state that represents a targeted strategic ideal. The connection between such business transformation and leadership is an important and recurring theme (Burns, 1978; Bass & Avolio, 1993; Bass, 1997). Without effective leadership, business transformation will not succeed and the strategic vision will not come to fruition. In today's tumultuous business climate, organizations often need to work against the competitive clock to transform systems, processes, methodologies, and competencies in order to enjoy brief competitive advantage, or even just to sustain profitability. The transformation we are presenting is not about the evolution of a new business entity (e.g. from hardware to systems solutions), and it differs fundamentally from "kaizen events" or site focused process improvement activities. Rather, the business transformation of concern here is implementing lasting change in the behaviors of an established organization, focusing on the preparation necessary to create the right structure, behavior, and methodologies as the underpinnings of business excellence. The ideal future state of the business transformation under discussion is the lean enterprise.

EXCELLENCE: THE LEAN ENTERPRISE

The lean enterprise embodies lean principles at its heart, that is, its operations are based on a manufacturing philosophy that eliminates activities that add cost but not value and it "reduces the time from customer order to delivery by eliminating sources of waste in the production flow." (Liker, 1997:7) The same principles flow from the operational heart throughout the organization, then upstream to suppliers and downstream to customers, encompassing an entire enterprise. In the words of James Womack and Daniel Jones (1996), the lean enterprise is a "channel for the value stream" from the design of a product or service to customer delivery. The lean enterprise articulates all its activities in answer to the question : What does the customer consider value?

The lean enterprise has two essential characteristics: focus on customers and cooperation (Maskell & Baggaley, 2003). In both, the end focus lies outside the boundaries of the organization, either by focusing on adding value to the customer or by interacting in a cooperative manner with customers, suppliers, and other third parties. Yet, the foundation for the lean enterprise lies in transforming the organization internally first through a cultural transformation and implementing lean tools. This paper focuses on the foundation.

The term "lean" was applied first by James Womack, author of *The Machine That Changed the World* and President of the Lean Enterprise Institute. He employed the term to describe the Toyota Production System in a way that would convey meaning and yet avoid country specific associations.

The lean approach was developed out of necessity at the Toyota Motor Company in the early 1950s. The situation facing the company was so markedly different from that of Ford Motor Company or General Motors that mass production methods could not be used. Toyota had small

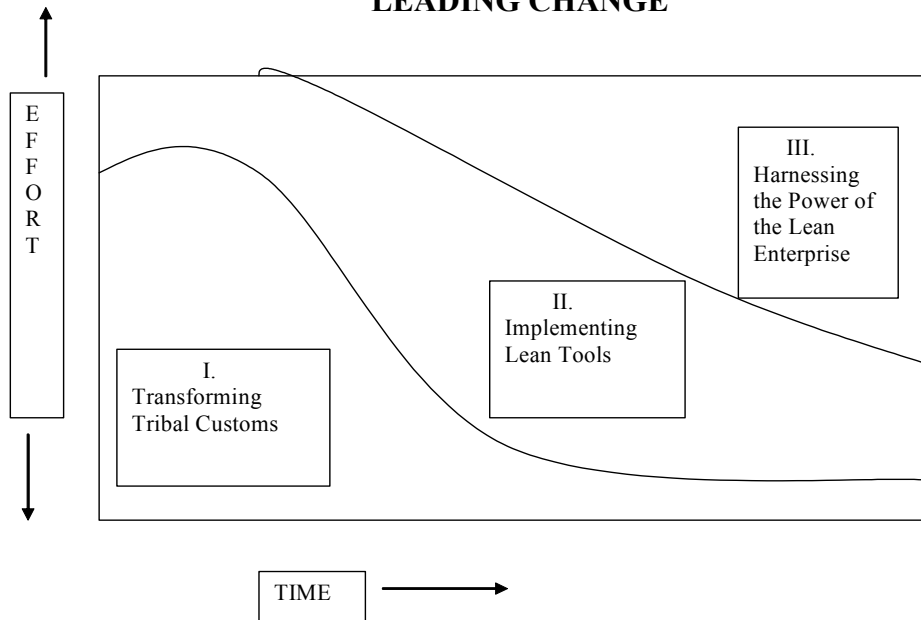
production, a wide range of vehicles to manufacture, a workforce that would not be treated as a variable cost, and a lack of capital for purchasing automation. The result, thanks to the genius of Eiji Toyota and Taiichi Ohno, was a system of lean manufacturing (Womack & Jones, 1996). Today, their system extends into the supply chain and forward to the distribution system. The result is the Lean Enterprise, a systematic approach to the elimination of all needless time, activities, transactions, and variation in the end-to-end flow from raw materials to customer delivery of finished products, including the flows for new product development and customer order processing. Companies that exemplify a lean approach to their operations and enterprise are Toyota, Honda, Denso, TI Automotive, Freudenburg NOK, Wiremold.

Transformation of a business to a lean enterprise is often expressed as a journey, due in part to the rigor and duration of the effort, but also symbolically due to the fact that perfection is not a destination. Instead, the ideal represented by the lean enterprise is a guiding beacon, or the magnetic north.

Our experience in both consumer goods and automotive components industries has led to the conclusion that there are three phases to the lean transformation: cultural transformation, implementing lean tools, and creating the lean enterprise. Experience has also proven that, at the beginning of the journey, the majority of effort must be put into achieving cultural transformation, or “Transforming Tribal Customs.” (See Figure 1) Over time, as the new culture takes root, more effort can be devoted to growing knowledge depth through implementing lean tools, the second phase, and then increasingly in harnessing the power of the lean enterprise, the third phase. Effort for maintaining the desired tribal customs diminishes, but it never goes away. Figure 1 depicts the three phase process.

Transforming a business to the lean enterprise is a complex task. Much has been written about the lean value stream and the principles of the Toyota Production System, and, after several decades, it continues to serve as the enduring global model of the lean enterprise. However, Toyota and other similar-thinking Japanese companies have developed almost all their non-domestic plants as greenfield initiatives. Flawless startup of a new site, while inculcating lean principles into a carefully selected group of fresh new employees, is a far less daunting task than converting an entrenched, change-resistant, stagnated organization to an entirely new, and (to those affected) unfamiliar, way of working, while simultaneously meeting the challenges of everyday business. We will be discussing how an existing organization can be transformed to a lean one. As noted by Yoffie and Kwak (2001), “Metaphors play an important role in business.” (ix) Therefore, throughout our discussion the business transformation process will often be expressed through the metaphor of a mountain climbing expedition, up the difficult north face of the slope.

**FIGURE 1: THE LEAN JOURNEY
LEADING CHANGE**



Passionate leaders with knowledge of lean systems are the first and most important element for creating lasting change. Leaders at the top need to be educated to develop a broad understanding of lean practices and how they interrelate as a system. Finding leaders with similar knowledge and passion in the descending layers of the management structure is seldom easy, but they often exist, sometimes latent, usually dissatisfied with the status quo. A powerful coalition of strong leaders, energized by challenge and committed to the transformation, even to the extent that they are willing to take significant career risk, must be identified in the organization. Transformational leadership at all levels, in addition to sharing a deep common understanding of the vision, must share a passion for carrying it out (Burns, 1978; Bass & Avolio, 1993; Bass, 1997). . The need to have strong and experienced change makers lead the effort should not be taken lightly. There will always be significant, if hidden, forces acting to thwart the change, since their comfort zone is the existing business model. Fujio Cho, former president of Toyota has colorfully described this resistance to change through an analogy (Murray, 2000):

Organizations are like the human body. When a change is attempted the body generates antibodies which become active to fight the change. The greater the change the stronger the antibodies.

Change has no constituency. As Machiavelli (1998) noted centuries ago, “Anyone who would invent a new system must expect the undying opposition of those who profit from the present method, and only lukewarm support of those who would benefit from the new.” Those with the most to lose from a major change will in some way obstruct progress. This is particularly true with middle management, since both the workers and top leaders more quickly see the advantages of making the transformation. Vision and direction must come from the top. Because change of any magnitude will be resisted, it is usually necessary for the vision and direction to begin as authoritative directives, clearly and strongly articulating an unarguable direction. As the transformation progresses, authoritarian approaches are replaced by coaching as respected change leaders at all levels are seen to support the effort. In return, respected change leaders receive recognition both for performance improvements and for applying their own entrepreneurial energy to the transformation itself.

In large companies, to make certain that the lean transformation has the desired coherence and execution speed, innovative leaders of change, like experienced expedition guides, must be simultaneously deployed and active in all business units to promote and facilitate change, despite any opposition they may encounter. Change leaders at a business unit or plant level direct, coach, and coordinate the installation of the knowledge, structure, and environment required for the lean transformation. Simultaneously, they are serving as the managers and general contractors for the multitude of initiatives required to actually execute large-scale workplace improvement.

Considering the scope and demands of this role, it is fitting to name these key change leaders “Transformangers”. Leadership and commitment bordering on crusader or revolutionary levels of activism, deftly blended with good listening, communicating, and coaching skills are the hallmarks of Transformangers. They also possess some characteristics in common with Six Sigma Champions and Black Belts: organizational respect, big picture understanding, creativity, and the ability to inspire (Mikel & Schroeder, 2000).

Considering these criteria, it may seem logical that the local business unit manager or plant manager could also be the Transformanger. The fallacy in this thinking is that day-to-day activities involving managing the factory and suppliers in support of the customer, as well as myriad requests from corporate headquarters, will always get first attention. Since transformation itself is a full time job, a dedicated change leader, the Transformanger, is necessary, at least at the level of each factory or business unit.

Under the plant level Transformanger there must be energetic change agents with deep skills and hands-on abilities in lean practices and systems. These highly trained implementers might be called “sensei” in Japan, but “Lean Beret” is a more fitting term for the Western business world. The Lean Berets’ responsibilities are teaching and guiding three to five work teams on the shop floor. As project leaders, they must be able to work shoulder to shoulder with team members to make real time improvement, validate process changes, or start all over after an improvement has failed to deliver the expected benefit. Lean Berets should be selected from aspiring candidates who have similar, but less seasoned expertise than the Transformangers. They need to be tolerant of criticism

and made more determined by setbacks. They need to be able to organize, prioritize, compromise, and energize.

One model, successfully used in the senior author's operations, was to select a few Lean Berets from the best new college hires. Those selected would facilitate and support two or three teams as "manufacturing assistants" after receiving Lean Beret training, but prior to being given broader responsibilities. In this way, talented young people learn factory operations, team fundamentals, and lean best practices prior to having direct line responsibility. The true level of enthusiasm, energy, and ability (or lack of it) to tap the performance potential of team based work systems, becomes visible quickly. The senior author has also used process engineers as Lean Berets.

Consideration must be given, however, to people skills over technical skills at the beginning of the transformation journey. Teams in their infancy need strong mentors, not technicians. Also, if support of transformation activities simply adds more tasks to the work of the process engineer, these new tasks will get less than desired attention. Urgent process technical support needs will demand time, and the new lean transformation work is likely to be less familiar and comfortable for the engineer.

For a single remote team, a truly inspired team leader may fill the roles of both Transformanager and Lean Beret. An illustration of such a dual role occurred not long ago. Over an 18-month period in a major consumer goods manufacturing company, just such a natural leader, Charlie, rose to transform an eleven-person distribution warehouse operation several miles distant from the manufacturing plant. Charlie quickly gained an understanding of basic lean principles and applied them to his distribution team. Within three months he had developed a "Warehouseman Certification Program" which encompassed lean practices as well as basic skills in fork truck operation, trailer loading, standardized methods for completing shipping documents, and customer-based performance measurements for delivery. When fully certified, aspiring Warehousemen earned a green jacket with their name embroidered on it. The standards of excellence set by this group and its entrepreneurial leadership served as an effective model for the main plant's transformation efforts as well as spreading the "can do" message to ten other manufacturing locations in the corporation. There is no telling what a Transformanager can accomplish and how a lean implementation can inspire new levels of organizational performance!

As visible leaders on the journey toward excellence, it is natural for experienced Lean Berets to rise to Transformanager roles. Similarly, Transformanagers progress to general managers or key functional heads. In company after company, the most effective change leaders have proven themselves to have the ability and experience needed to become excellent general managers and vice presidents. Leading a challenging mission of large-scale change from business as usual to lean enterprise culture and practices requires and develops exceptional skills, in project management and communication. Leading large-scale change also requires and develops the ability to engage the creative talents of all employees in team-based work systems.

A word of caution must be given here. Experience has shown that, while excellent Lean Berets and Transformangers quickly distinguish themselves from their peers, promoting them too quickly slows the transformation. One large multi-national corporation reached a plateau in its transformation journey largely because the initial change leaders were promoted to line roles before the cultural transformation had been securely rooted. The learning curve for the less experienced replacements caused a real performance set back in the affected organizations.

SUPPORTING MECHANISMS FOR LEAN TRANSFORMATION

Transformangers and Lean Berets must be supported throughout the transformational journey by unwavering sponsorship from the top and a structure that allows them to make decisions and to use their skills to keep the organization moving quickly forward. While inspired leaders in the middle can make a real difference, the leadership at the top of the organization must exhibit unwavering commitment to the pursuit of excellence and related transformation initiatives. Because of both visibility and power of position, actions at the top set the course and pace for the organization. Hints of hesitation, change of heart, or shifted direction can spell disaster. No one wants to be part of an initiative that is falling out of favor with the company's top sponsor. The endless journey to the north face must have a relentless sense of passion and excitement generated from the top.

A colorfully painted and thoroughly articulated vision of excellence is used by successful transformational organizations to create a common purpose, align direction and initiatives, and provide an effective new organizational framework and environment. John P. Kotter (1996) indicates that underestimating the power of vision is a significant cause of failure in transformation efforts:

Vision plays a key role in producing useful change by helping to direct, align, and inspire actions on the part of large numbers of people. Without an appropriate vision, a transformation effort can easily dissolve into a list of confusing, incompatible, and time consuming projects that go in the wrong direction or nowhere at all. (7)

In the case of the business transformation to lean, this vision is a vivid and compelling description of what it will feel like, what it will look, and what it will be like when the organization reaches its goal of operational excellence, that is, becoming lean.

Capturing the vision through an easy to read employee manual using basic descriptions of lean principles, all tailored to custom fit the company culture, has been successfully used by the senior author in four different companies. The manual becomes the "Tribal Bible" since it institutionalizes a common context for lean systems and serves as the foundation for lean training at a level of familiarity. Through continual communication and exposure to the Tribal Bible, all employees share a clear, common understanding of the vision, direction, and common language. The resulting sense of common purpose and future state benefits is best described as "Tribal Alignment". **Alignment** is a necessary first step for any meaningful transformation to move forward; it effectively creates a

clear path to the “magnetic north” of the organizational vision. Alignment provides a guidance system for the organization on its journey and creating alignment is often the key activity for successful transformation. For Collins and Porras, authors of *Built to Last: Successful Habits of Visionary Companies*, “Building a visionary company requires 1% vision and 99% alignment.” (1996:78) Never should creating alignment be confused with mere slogans.

Experience has shown that a clearly articulated vision, based on describing the desired end state itself, or well conceived competitive performance levels embodied by the desired end state, can become the effective magnetic north for the organization. This mechanism of driving lean transformation by setting standards of performance has proven particularly effective in many organizations. For example, ArvinMeritor (formerly Arvin Industries), a major automotive components supplier, has been selected by Industry Week as one of the 100 best-managed companies. They have generated amazing year over year performance improvement since 1995 by using 13 World Class performance metrics as a standard for lean certification for each of the natural work teams in the enterprise. Teams that meet or exceed these metrics are recognized and rewarded by top management with celebrations, visible awards, banners, and other displays of outstanding performance achievement. The teams are inspired to greater levels of performance, since the measures themselves are credible to the team members and clearly enhance customer and shareholder value. Effective communication makes employees fully aware that a demanding market requires meeting demanding performance metrics and they rise enthusiastically to new stretch challenges.

Successful transformation is not change imposed on employees, rather it is change accomplished by engaging employees in an enterprise-wide pursuit of meaningful common goals. This fundamental cultural change is not proposed for the sake of platitudes like individual freedom and feeling of belonging. Instead, the purpose is to harness the energy and enthusiasm of employees and channel it to create lasting, exceptional business performance. Jon R. Katzenbach (2000) describes this alignment of the high performance workforce:

The companies we studied are very disciplined about maintaining certain channels of alignment supported by a wide variety of mechanisms to....strike a dynamic balance between enterprise performance and worker fulfillment. (18)

Whether using the vision to be or the performance to be, repeatedly emphasizing, recognizing, and modeling the company vision or the standards of performance excellence becomes the mechanism for converting magnetic north direction to tribal alignment.

Unlike a conventional point on a compass, this magnetic north must be infused in the organization’s way of life through constant and consistent communication. In a survey of CEOs, 98% of them cited communicating a “strong sense of vision” as the key activity for organizational performance (Lipton, 1996:85). Successful organizations employ a vast array of mechanisms to communicate again and again their vision. Medtronic, worldwide manufacturer of biomedical devices, adeptly uses communication to align all employees and processes to their vision. From their

convocations for new employees to their annual holiday celebrations, from the photographs of product users whose lives have been transformed by Medtronics to the medal each employee receives, every organization communication and symbol reinforces the purpose of Medtronics and aligns people and systems toward that purpose. In-house publications, organization-wide electronic messages, celebrations, speeches, informal discussions and the day-to-day behavior of leaders provide planned and unplanned opportunities to communicate the vision throughout the organization (George, 1999).

ORGANIZATIONAL LINKAGES AND STRUCTURES

To continue the metaphor of the business transformation as a mountain climbing expedition, complete alignment is like the well-calibrated compass, a committed sponsor is the leader, and the transformanagers and lean berets are outstanding guides. They are necessary but not sufficient conditions. The organization still needs to determine an expedition team structure for the members and mechanisms to link members and teams. Of course, we also need to make sure that each individual member has the necessary climbing skills to ascend the treacherous North Face of business transformation.

In business, as in expeditions, success hinges on connectivity and effective teamwork. We recommend a Linchpin Team Structure that links the management teams leading the transformation throughout the enterprise can stay linked. This Linchpin Team Structure is similar to the Linking Pin concept originally developed by Rensis Likert, but with important differences (Likert, 1961). It is not a supervisor or manager with hierarchical authority over a work group who provides the necessary linkage. Rather, the Linchpin Team Structure joins multiple teams to a higher-level team by placing a Lean Beret in support of three to five natural work teams. The Lean Beret becomes the mentor and coach for the team leaders in his or her area.

All Lean Berets in a worksite sit on a plant-level lean implementation steering committee chaired by the Transformanager for that plant. For multi-plant businesses, the plant level Transformanager would sit on a division or group-level lean implementation steering committee, chaired by the Transformanager for that division. In turn, the division level Transformanager would sit on a corporate-level lean implementation steering committee, chaired by the Transformanager for the corporation. The corporate level Transformanager, sometimes known as the chief operations improvement officer, is the lean organization's most visible change maker, next to the CEO and COO.

Our experience in several industries has shown that the speed and sustainability of cultural change was positively impacted when programs maintained this type of linkage between key change leaders, business unit management, and top management. The linkage permits sharing experiences and best practices, while providing visibility so as to rate of implementation at each unit. Such

visibility creates more than subtle peer pressure for accelerating implementation rate. Care must be taken, always, not to misuse valuable time with excessively long or frequent meetings.

THE IMPORTANCE OF TEAMS

Lasting transformation of a business culture starts and ends with empowering employees to make the decisions necessary to conduct and improve their daily work. Engagement of all employees is a necessary condition for lean systems. Ownership and active support of initiatives requires that the natural work teams participate fully in shaping, leading, and implementing lean initiatives. Therefore, a team-based work system is strongly implied in organizational transformation. Based on our experience, major change with a desired, long-lasting outcome was never accomplished entirely as a top-down initiative imposed on functionally structured silos or pyramidal organization.

Teams, not individuals, are the focus of the lean enterprise. The biggest obstruction to team success is entrenched middle management, also known as the “muddle in the middle”. Middle management must be dealt with early and in a focused way. Creating an environment for team ownership depends on changing the mindset of middle managers from controlling, deciding, solving, and imposing to a new role of listening, encouraging, teaching, and coaching. Middle managers need to move from feeling superior because they are an “insider” to making everyone feel like an insider. Middle managers must learn to grow not by individually making all the decisions and fighting all the fires, but instead by preparing their teams to share leadership through an orderly process of delegation. This concept of shared leadership does not come naturally and will need formal training and behavioral reinforcement before it becomes second nature. The most difficult skill for most to learn is creating voluntary followers by mentoring, encouraging and supporting people; applying this skill is much less comfortable than relying on power and applying fear in the traditional time-proven methods of consequence management.

Teams assemble multiple skills, judgments, perspectives, and experiences to deliver a richness of creativity and performance that is beyond that achievable through a hierarchy. Lasting performance change and innovation needs to happen through the collective efforts of the people actually performing the work. Real change cannot be effectively decreed, but, instead, it must be inspired by leaders articulating a vision of the destination, establishing meaningful performance requirements as mileposts on the lean journey, and then encouraging creativity in the teams by developing and implementing the means of attainment. As noted by Kazenbach and Smith (1993), “The team is the basic unit of performance for most organizations.” Nowhere is this more true than in the lean organization. Our experience confirms their observations of fifty different teams in 30 firms: teams thrive on performance challenges, but quickly flounder without them. Teams need a performance-driven purpose to nourish and justify the team’s existence. Teams also need to be accountable for performance expectations. In other words, a team-promoting environment alone is unlikely to have a favorable business performance impact.

This fundamental of team dynamics was observed first hand by the author when he joined a major capital goods company as head of operations. This particular company had discovered team based work systems decades earlier and had created a mature team environment in most of its manufacturing plants. Unfortunately, local management felt that managing their day-to-day operations was a sufficient, if vague, challenge for the teams. Consequently, at the inception of the lean transformation, attitudes and team relationships were superb but performance was not. By personally challenging the teams with visible lean improvement projects, the teams developed a new energy and enthusiasm. Most could hardly wait to showcase their improvements during return visits, and in most cases went far beyond the author's suggestions. Why had this resource not been tapped previously? In our opinion, many senior managers simply have a basic misunderstanding of the difference between "having teams" and "developing high performance teams". Effective teams enhance enthusiasm and performance. Teams develop emotional commitment. Teams create identity. Teams have fun.

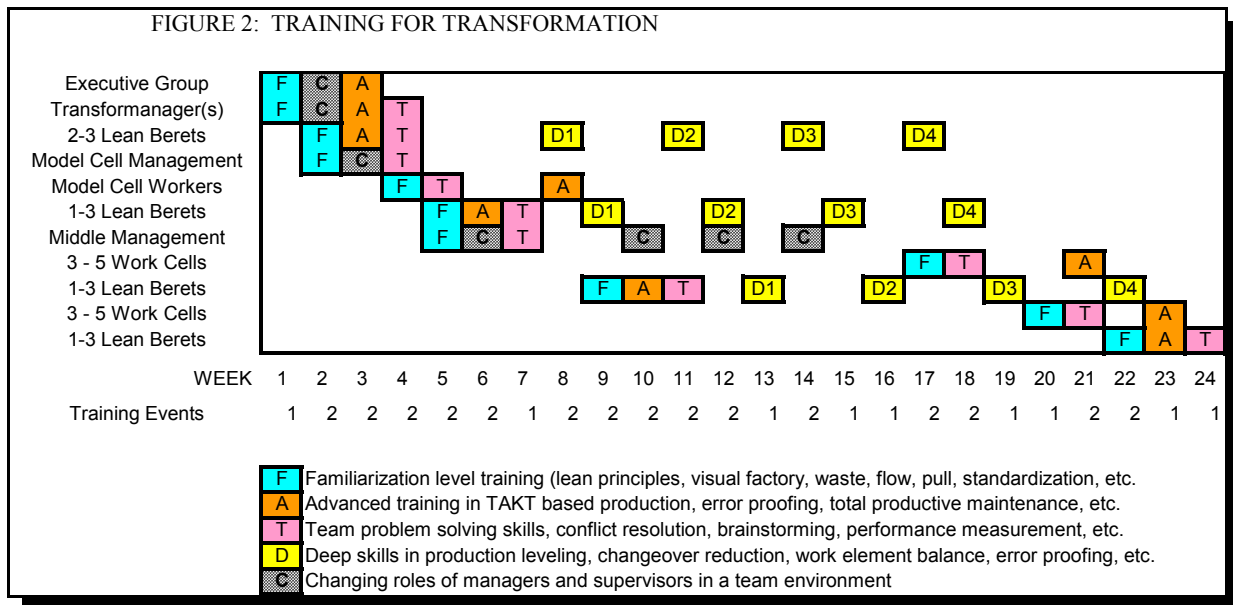
THE IMPORTANCE OF TRAINING

Finally, the necessary climbing skills for the lean expedition must be addressed. Business transformation of this magnitude quickly overwhelms training and employee development resources. Therefore, the most qualified and respected managers need to be converted to become certified trainers. This group can be augmented by outside resources, using one of the few consulting companies who have the credible skills and experience to be effective in this arena. Examples of such companies include the Lean Enterprise Institute and Productivity, Inc. Next, comprehensive training schedules must be developed to assure that training fully supports the work cell roll-out for lean implementation.

Change leaders can be selected on the basis of attributes described earlier, but even with the best raw material, significant training is needed to create knowledgeable employees. Training hours completed throughout the organization is a key metric of lean implementation. Unfortunately, the transformation landscape is littered with the remains of unsuccessful expeditions that tried shortcuts in training or focused on classroom hours without equivalent application hours that allow knowledge to be reinforced and absorbed. To avoid wasted investment, applying the newly acquired skills in a problem-solving scenario must quickly follow classroom sessions to transfer knowledge and ensure it is retained. Ideally, each training and application experience should occur with natural work teams to reinforce further team behaviors while the team acquires skills. Managers at all levels must participate in the training. Training is the only credible method for all to understand the skills required for the journey and to take the pulse of the employees' attitudes and knowledge during practical application.

Figure 2 illustrates a recommended rollout of course modules; it allows training to be sequenced and leveled to control class size and to minimize potential strain on organization

resources. Note also that every employee must receive familiarization level training in lean principles (the “F” module). Nearly all should receive problem solving, conflict resolution, and other team-based skills (the “T” module). To address the anticipated resistance by middle management, intensive role re-training, focused on the changing role of managers and supervisors (the “C” module in Figure 2) must be accomplished early in the transformation to create an environment of shared leadership and delegation with the teams.



Those who will apply lean principles in the workplace should receive training in more advanced improvement tools (the “A” module). Finally, the Lean Berets need a succession of in-depth training in lean tools spread over four modules (the “D1-D4” modules). These can be spaced with two weeks of application time intervening to reinforce learning and also provide time for the Lean Berets to personally support implementation in the model cells.

Training and support for the pilot or model cell is of prime importance. Since the pilot sets the tone and pace for the rest of lean transformation, it must be a visible success. As noted by Collins (2001) companies build momentum from consistent efforts behind its concept that are reinforced by success. In line with the degree of importance of the pilot’s success, significant training resources must be dedicated to support the change effort. No matter what resources are needed, the pilot can never be allowed to fail. Successive cells are usually less visible and problematic because success breeds success!

DEDICATED RESOURCES

Lean transformation, a change of monumental significance, must be led with passion and commitment from the top and supported by equally passionate, strong, knowledgeable disciples: the Transformangers and Lean Berets. Until the change journey is well underway, these Transformangers and Lean Berets must be dedicated resources focused on this effort. When the vision is important to the business, implementation should not be relegated to part-time fill-in work. As maturity is gained on the journey to lean, and efforts shift in emphasis from Tribal Customs to Lean Tools, the role of Transformangers and Lean Berets can gradually be filled by the functional area managers as they become a lean sensei and passionate disciples.

Lasting transformation depends on investing in employee training for two vital outcomes: employees must know the tools and techniques of lean systems and employees must adopt the lean culture as their own. Only when the new culture of the lean organization has been instilled can the organization migrate from traditional control hierarchy to a fully empowered team structure. While application of lean tools alone can certainly improve a process, changing the work environment to one of complete employee involvement and ownership will create lasting transformation and vastly increase the innovation and improvement yield from those tools.

Leaders with passion must create the right structure, behavior, and methodologies as the underpinnings of business excellence, then continually demonstrate their commitment by investing in people, and trusting in their decision-making and problem solving abilities. Most important of all, communicating consistently and frequently the shared vision and the organizational direction of the lean enterprise will maintain momentum up the mountain of excellence. Meticulous preparation assures the stamina and mindset needed to persevere in the march of endless steps on the journey toward the North Face of Excellence.

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STRATEGIC COMPARISONS OF VERY LARGE FIRMS TO SMALLER FIRMS IN A FINANCIAL SERVICE INDUSTRY

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ABSTRACT

The paper presents an empirical investigation comparing strategic profiles of very large enterprises (VLEs) to small and medium sized firms (SMEs) in the financial services industry, collecting data from a sample of executives at credit unions. In particular, the authors find VLEs to be larger, more structurally integrated, centralized and complex, more market oriented, and to be more aggressive firms in general when compared to SMEs. The VLEs also show higher levels of perceived relative profitability and relative adaptability than SMEs. However, no differences are found between VLEs and SMEs regarding profitability when considering accounting returns. It appears that size is a critical factor to be considered in the financial services industry.

INTRODUCTION

The purpose of this paper is to examine empirically the relationship of organizational size to the strategic profiles of firms in the financial services industry. In particular, very large firms (VLEs) are compared to small and medium size firms (SMEs) across a range of performance, structural, and strategy constructs. The size of an organization often is viewed as a surrogate for the many detailed dimensions of an organization's structure and related decision making patterns (e.g., Dalton et al. 1980, Pugh et al. 1968). Therefore, we may expect important strategic profile differences between VLE and SME firms, which in turn may provide guidance to managers and other interested parties for future strategy decisions.

It is important to note that a precise determination of a strategic profile in any firm is not easily accomplished. Inconsistencies in the findings from empirical studies point to a conclusion that an acceptable strategy will depend on the situation (Provan 1989). But, the question of how the size of firms relate to strategy has seen renewed interest in the past decade, as the globalization patterns of large corporations impacts the survival of smaller firms in various countries around the world (Hutchinson et al 2005, Pan and Li 2000). This is especially relevant since the trend in a variety of industries is to fewer but larger firms (Daniels et al 1988). Additionally, many recent works have shown that small firms exhibit differences from larger firms on a variety of factors, which may or

may not influence performance (c.f. Bhaskaran 2006, Taymaz 2005, Pompe and Bilderbeek 2005, Acar et al 2005, Biesenbroeck 2005, Smith et al 1986).

Thus, the current study attempts to determine whether company size differences across a profile of strategic constructs is evident in firms in the financial services sector. The majority of studies related to size and strategic decisions appear to investigate manufacturing firms (Van Biesenbroeck 2005, Bommer and Jalajas 2002, Schuh and Triest 2000). Thus, this study adds to those in the minority which address non-manufacturing sectors of business (Wernz 2002, Hutchinson et al 2005, Daniels et al 1988). This paper begins with a review of the relevant literature, which is followed by a description of the sample, the measures, the analysis and results, and concludes with a discussion of the findings from the research.

VLES AND SMES

Organizational size is a characteristic of the firm representing how large or small a firm might be. It is measured in a variety of ways depending on the industry under study, including the total sales, number of employees, or asset-holdings of firms (Calof 1993, Dalton et al. 1980, Joaquin and Khanna 2001). Size is an important research variable as it often exhibits an association with the major characteristic descriptors of decision making outcomes: organizational structure, strategy, and performance. In particular, it is widely accepted nowadays that small and large firms differ in many ways, not limited to the availability of funds for activities and management styles and objectives (Beaver 2003). These differences may result in divergent paths to success or failure in many industries.

The literature points to firm size as a determinant of company strategy as indicated by distinctive group membership, but with no clear conclusions evident as to which is better. Size appears to have some influence on export-related activity and strategy, but there is question as to whether it is more advantageous to be of large or small size (Bilkey 1987, Birch 1988, Calof 1993, Edmund and Sarkis 1986, Ekanem 2000, Joaquin and Khanna 2001, Moini 1995, Wolff and Pett 2000). The findings from other studies suggest no relationship between size and strategy (Francis and Colleen 2000, Leonidou and Katsikeas 1996). This may be due to the presence or absence of other important variables, such as export experience or foreign market knowledge, for example (Edmund and Sarkis 1986).

The size of firms is also shown to play an important role in organizational design. Larger firms are found to integrate operations over bigger areas than smaller firms: regional or global even (Dunning 1992). Also, larger firms show a more structured organization in general, being more centralized and using more non-personal forms of control over decision making (Ronen and Shenker 1985).

Other studies have shown an important role for firm size as a moderator variable in relation to various performance indicators. For instance, Pelham (2000) found a significant impact of size on

the outcomes of market orientation. Ali and Swiercz (1991) claim that mid-sized firms offer the greatest potential response for increasing export performance. Smith et al (1986) have found that size plays a role in the success or failure of strategies. More specifically, they find that defenders outperform analyzers and prospectors as small firms, while prospectors perform better than defenders and analyzers as medium to large size firms, and analyzers perform better as very large firms. Even productivity seems to be influenced by firm size, in most cases with small firms outgrowing large firms (Sleuwaegen and Goedhuys 2002). However, Biesenbroeck (2005) shows that this is not always the case; in some areas, large firms grow faster than small firms in some African industries (Biesenbroeck 2005).

INDUSTRY/SAMPLE DESCRIPTION

In the financial services industry, credit union executives are the target of the survey. Data for the study are gathered from a statewide survey in Florida of all the credit unions belonging to the Florida Credit Union League (FCUL). Membership in the FCUL represents nearly 90% of all Florida credit unions and includes 325 firms. A single mailing was directed to the president of each credit union, all of whom were asked by mail in advance to participate. A four-page questionnaire and a cover letter, using a summary report as inducement, were included in each mailing. Of those responding, 92% were presidents and 8% were marketing directors. This approach yielded one hundred and twenty-five useable surveys, a 38.5% response rate. A Chi-squared test of the respondents versus the sampling frame indicates that the responding credit unions are significantly different from the membership firms based on asset size (Chi-sq=20.73, df=7, p<.01). Further analysis of the sample indicates that the smaller asset groups are under-represented.

MEASURES

Firm Size is included as the primary focus of the investigation. Size is oftentimes viewed as a proxy for many other organizational characteristics and has an integral impact on firms' activities (c.f. Hall et al 1967). In particular, asset size (ASIZE) is the indicator used to represent size of credit unions. Firms are self-classified by marking the box next to the appropriate asset size category and then an approximate ratio-level indicator, ASIZE, is derived from the categories. The largest size category, \$50M or above, represents a minimum size for the largest firms. Therefore, the actual size of the largest firms may be much higher. The size of each credit union is assigned to be the midpoint of the self-selected category. This procedure provides an acceptable size estimate when accumulated over an entire sample. ASIZE, therefore, has a possible range from \$250,000 to \$50,000,000, a mean of \$18,000,000, and a standard deviation of \$17,121,020. Firms with asset size holdings of \$50M or more (the category with largest assets) are considered to be very large firms (VLEs), while all other firms are considered to be small and medium sized enterprises (SMEs). VLEs represent 13.7%

(17/124) of the firms, while SMEs total 86.3% (107/124) of the credit unions. The average asset holdings for VLEs are at least \$50M, while the holdings of the SMEs are \$13.2M. The reader is referred to Table 1, later in the text, for this and other statistics. Note that the VLE credit unions are approximately four times as large as the SME firms.

Organizational structure is measured using relevant company dimensions from the literature: formalization, integration, centralization, and complexity. These four structural characteristics are measured for each firm using a twelve-item instrument ranging from [1] true to [5] not true. Respondents are asked to circle the number which best describes their firm in regards questions such as: "decision making is highly controlled". The twelve structure variables are subjected to a factor analysis using principal factors followed by a varimax rotation. One of the twelve items was eliminated due to inconsistent loading, leaving eleven items. This procedure results in three dimensions explaining 60% of the original variance: (1) formalization (FORM) - four items, (2) integration (INTE) -three items, and (3) centralization and complexity combined (CNCM) - four items. Summated scales are used for each of the three components to derive overall indicators of the structural dimensions themselves. Reliability, as measured by coefficient alpha is as follows: .791 for formalization, .696 for centrality/complexity, and .642 for integration. FORM ranges from four to twenty, with a mean of 13.1 and a standard deviation of 3.2. INTE is adjusted have a range from four to twenty also, and has a mean of 11.6 with a standard deviation of 3.6. CNCM ranges from four to twenty, with a mean of 9.0 and a standard deviation of 3.1.

Marketing initiative, or aggressiveness, is conceptualized as inclusive of six relevant areas related to marketing strategy: products, advertising campaigns or other promotions, pricing changes, distribution ideas, technology, and markets (Heiens et al 2004, Pleshko et al 2002). Respondents are asked to evaluate on a scale from [1] not true to [5] true whether their firm is 'always the first' to take action regarding the six items. A principle axis factor analysis indicates the six items load highly on a single factor explaining approximately 67.9% of the original variance in the items. An overall indicator of strategic marketing initiative (SMI) is constructed by summing the six items. A reliability estimate is found to be .902 using coefficient alpha. SMI has a range from six to thirty, a mean of 13.7 and a standard deviation of 5.7. On the average, credit unions do not exhibit large amounts of marketing initiative.

Market-orientation is defined as a firm's perspective towards its market environment and, in particular, towards its customers and competitors. The instrument items are adapted from previous research (Pleshko and Heiens 2000, Narver and Slater 1990). Respondents are asked to evaluate their firm's efforts in the marketplace on a scale form [1] not true to [5] true. The seven items are subjected to a factor analysis using principal axis factoring followed by a varimax rotation. The analysis resulted in two components, three for competitor orientation and four for customer orientation, explaining 69.7% of the original variance. Summated scales were used to represent each of the two components: *customer-focus* (CUSTO) and *competitor-focus* (COMPO). CUSTO and COMPO have a possible range from four to twenty-eight. The reliability of the scales, as measured

by coefficient alpha was: customer-focus - .834 and competitor-focus - .789. An overall indicator of market orientation (MARKO) is also created by adding the two components, as in previous empirical efforts (Narver and Slater 1990). CUSTO has a mean of 7.8 and a standard deviation of 2.1. COMPO has a mean of 13.5 and a standard deviation of 3.6. Finally, MARKO, the sum of the two dimensions, has a mean of 31.3 and a standard deviation of 4.5.

Regarding *firm performance*; market share, profitability, and adaptability indicators are included in the study. In addition, both perceptual and accounting variables are included as well, which should alleviate some of the problems associated with each type of measure (Venkatraman and Ramanujam 1986, Rueckert et al 1985, Keats and Hitt 1988, Frazier and Howell 1983). It is also possible that objective measures may lead to different results than perceptual measures (Kirca et al 2005). Also, market share and profits are two distinct goals, each with their own demands on the firm. The inclusion of both marketing goals in the study should greatly add to the findings, especially since different strategies may affect share but not profits, or vice versa (Kirca et al 2005).

The accounting indicators of performance, *ROI* and *ROA* are taken from government-mandated accounting reports. The *ROA* indicator has a range from 0% to 5%, a mean of 2.20%, and a standard deviation of 0.98. The *ROI* indicator has a range from 1% to 17%, a mean of 7.77%, and a standard deviation of 2.26.

For the *perceptual performance* indicators of market share and profit, ten items are included on the instrument as described below. Note that these ten items represent *relative* perceptions of a firm's performance. The ten items are subjected to a principle axis factor analysis, followed by a varimax rotation. This procedure results in two distinct dimensions explaining 66.4% of the original variance in the ten items. The items load as expected with one dimension representing perceived relative profits and the other representing perceived relative market share. *Relative market share* (PSHR) is a perceptual indicator measured using a five-item scale, ranging from [1] poor to [5] excellent, as regards five baselines of market share: (1) vs. competitors, (2) vs. goals/expectations, (3) vs. previous years, (4) vs. firm potential, and (5) growth. The overall indicator of relative market share performance, PSHR, is constructed by summing the five. A reliability of .872 is found using coefficient alpha. PSHR ranges from five to twenty-five with a mean of 14.6 and a standard deviation of 3.5. The perceptual indicator of *relative profits* (PPRR) is derived from five questions also. In particular, respondents are asked about their profit performance on a scale from [1] poor to [5] excellent, relative to five profitability baselines: [1] vs. competitors, [2] vs. goals/expectations, [3] vs. previous years, [4] vs. firm potential, and [5] growth. An overall indicator of PPRR is constructed by summing the five items. A reliability of .870 is found using coefficient alpha. PPRR ranges from five to twenty-five with a mean of 16.0 and a standard deviation of 4.3.

Additionally, a single-item indicator of perceived *adaptability* (PADP) is included. It is measured using a scale ranging from [1] poor to [5] excellent, as regards a single item: adaptations made to the changing environment. PADP has a possible range from one to five, a mean of 3.3, and a standard deviation of 0.9.

One indicator related to the firm's perceptions of the external environment is included: *Environmental Dynamism* (DYNA). The environmental construct is described as the amount of change occurring in an industry environment (Miller 1988, Achrol et al 1983). The respondents are asked to evaluate their perceptions of the environment on a bipolar scale from [1] to [7] across three items representing dynamism: stable/unstable, variable/not variable, and volatile/not volatile. A factor analysis using principal axis factoring followed by a varimax rotation is performed. The three items load on one dimension explaining 58.7% of the original variance. A summated scale is constructed for DYNA with a reliability of .639 using coefficient alpha. DYNA has a possible range from three to fifteen, a mean of 7.3, and a standard deviation of 2.4.

ANALYSIS/RESULTS

Averages are calculated on all the strategic indicators for the two size groups: VLEs and SMEs. This is followed by an analysis of variance to determine significant differences. Table 1 exhibits the means, test statistics, and summarizes the findings for the two groups and each variable.

Regarding the structural indicators, two of three structural dimensions show significantly different levels between VLEs and SMEs. Formalization (FORM, $p=.108$) shows no differences between large and small firms, while both integration (INTE, $p=.007$) and centralization/complexity (CNCM, $p=.000$) exhibit significant differences between the size groups. In both cases the VLEs have higher levels of the structural dimension than the smaller SMEs.

Pertaining to the marketing strategy indicators, two of four constructs show significantly different levels across the groups. For marketing initiative or aggressiveness (SMI, $p=.001$), VLEs display significantly more initiative than the SMEs. Also, for overall market orientation (MARKO, $p=.047$), VLEs display significantly higher levels than the SMEs. But this MARKO difference is not based on either of the two dimensions independently, as neither CUSTO ($p=.263$) or COMPO ($p=.074$) exhibit differences between VLEs and SMEs.

The table also reveals that size groups differ on performance, with two of five indicators exhibiting significant differences. For the perceptual indicators, relative share (PSHR, $p=.089$) is not statistically different, although it appears to approach the level of importance. However, both relative profits (PPRR, $p=.031$) and adaptability (PADP, $p=.008$) both show statistical differences. VLEs exhibit more adaptability and higher relative profits than SME credit unions. But, the objective accounting performance indicators (ROI, $p=.094$; ROA, $p=.606$) show no differences between very large and other firms.

Finally, no differences are shown for the perceptions of the external environment (DYNA, $p=.587$). Next, a discussion of these findings is presented.

Table 1: Size Group Profiles

Variable/Group	VLEs	SMEs	T	'p'	Finding
Number	17	117			
ASIZE (avg \$M)	\$50M+	\$13.2M	30.6	.000	VLE>SME
Structure					
FORM (avg)	14.2	12.9	1.62	.108	
CNCM (avg)	10.9	8.7	3.89	.000	VLE>SME
INTE (avg)	13.8	11.2	2.73	.007	VLE>SME
Strategy					
SMI (avg)	18.0	13.0	3.51	.001	VLE>SME
CUSTO (avg)	18.4	17.7	1.12	.263	
COMPO (avg)	14.9	13.2	1.80	.074	
MARKO (avg)	33.3	31.0	2.00	.047	VLE>SME
Performance					
ROI (%)	7.2	7.8	1.70	.094	
ROA (%)	2.3	2.1	0.51	.606	
PPRR (avg)	18.1	15.7	2.18	.031	VLE>SME
PSHR (avg)	16.0	14.4	1.71	.089	
PADP (avg)	3.8	3.2	2.67	.008	VLE>SME
Environment					
DYNA (avg)	7.0	7.4	0.54	.587	

DISCUSSION/IMPLICATIONS

The primary purpose of the paper is to present a strategic profile of both very large firms (VLEs) and the smaller to medium size firms (SMEs) in the financial services industry. Specifically, the author investigates differences between VLEs and SMEs on a variety of structural, strategy, and performance indicators. It is shown that VLE and SME firms exhibit a lot of similarity, with no significant differences on many of the variables: formalization, customer focus, competitor focus, relative market share, ROI, POA, and environmental perceptions. However, there are many important differences between VLEs and SMEs. For every indicator showing significant differences, the VLE firms exhibit higher levels on that variable compared to the SME firms. VLEs are much larger (obviously), have more integrated decision making, a higher level of centralization and

complexity in the decision structure, more focus on their markets, more aggressiveness in marketing activities, and higher levels of adaptability and relative profitability.

These findings suggest that very large financial services firms (VLEs) have performance advantages compared to smaller firms, having larger total returns due to their size. But these larger returns are not translated into higher returns on investment or assets, both percentage indicators. It may be that VLEs spend much more money than SMEs adapting to the environment and implementing new marketing programs in hopes of taking advantage of extant opportunities. These additional expenditures may not always lead to enough marginal performance to improve ROI and ROA. Therefore, successful firms that want to make more money may simply try to grow larger, given the average returns in this sector of the industry.

In fact, this striving to become larger - given constant percentage returns - may be what was behind the wave of consolidations in the credit union sector, and financial services in general, during the past twenty years (c.f. Wilson and William 2000). In both Britain and the United States, asset holdings rose dramatically throughout the 1990s (Kaushik and Lopez 1996, Jefferson and Spencer 1998, Wilson and William 2000). In the United States during this time, an industry consolidation led to larger institutions, resulting in stronger competitors within the industry (Kaushik and Lopez 1996, Pleshko and Cronin 1997). Additionally, an easing of restrictions led to cross-industry battles with other types of financial institutions, such as traditional banks and savings banks (Allred and Addams 2000). Thus, it appears that managers all over the industry, pressured to achieve higher overall returns, turned to acquisitions, new markets, or increased penetration to grow assets and become larger firms.

Since most firms in this study show relatively small levels of initiative, but above average emphasis on customers (see Table 1 and refer to text for range of indicators), it may have been a relatively easy step to invest a bit more money and time into more aggressive marketing activities. After all, the entire industry, as would be expected in this type of high-involvement service environment, is heavily focused on serving and keeping customers, as they are the mainstay of the business.

Additionally, as the small firms became medium sized and others became VLEs, organizational designs were altered to provide more adaptable, market-oriented firms, with organizational structures to support this striving for bigness. In doing so, large financial services firms, as noted in this study, needed to be more structurally integrated to handle decision making across a larger company. These larger firms also had to develop systems to allow more centralized control over decision making from a more complex organization, employing skilled managers with a variety of goals.

CONCLUSIONS/LIMITATIONS

The paper studies financial services firms to determine if the strategic profiles differ based on the size of the firm. In particular, the authors investigate how very large firms (VLEs) differ from

other firms (SMEs) in a sample of executives at credit unions in the USA. The findings suggest that VLEs and SMEs have many similarities in areas such as performance returns, formalization levels, and their focus on customers and competitors. However, there are many other strategic areas where VLEs and SMEs show striking differences. The very large firms, when compared to the SME firms, are more adaptable, more aggressive with marketing activities, have a more integrated and centralized (not to mention complex) organizational design, all leading to higher levels of relative profitability. Growth in an industry such as this one in financial services, where similar percentage returns may be viable for all possible sizes of firms, may be most easily achieved by simply getting bigger.

Caution should be used when generalizing this study to other firms, whether in products or services industries. There several limitations to the conclusions based on the methodology of the study. First, one-shot studies during a single time period are often myopic when investigating strategies. Hatten et al (2004) find that the effects of strategies evolve over time and that it is the implementation of the strategy which is truly important, rather than the classification of the strategic type. Thus, the distinctions derived from the strategic variables might be different if measured at (a) an earlier or later time in the same manner or (b) continuously over time. Also, a more objective indicator of market share, rather than the perceived relative indicator of this study, may lead to other conclusions. In addition, the study should only be cautiously generalized to other firms in the financial services industry outside of credit unions. Credit unions exist in an environment that is more protected than other financial institutions, such as banks, and therefore any generalizations might be suspect. It is suggested that future studies investigate this relationship in banks, savings & loans, and other financial services industries. Future studies might also apply this framework to products industries in both the business-to-business and consumer products area to further test the findings.

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