JMI
Journal of Managerial Issues
JMI

Volume XXXII Number 1 Spring 2020

30th Anniversary Issue

The *JMI* in Brief

Articles

Volume XXII Number 4 Winter 2010

Volume XVII Number 3 Fall 2005

Volume XVI Number 3 Fall 2004

Volume IX Issue 3 Fall 1997

KELCE
COLLEGE OF BUSINESS
Pittsburg State University

Statement of Purpose

The purpose of the *Journal of Managerial Issues* is to contribute to the advancement of business knowledge by publishing high-quality basic and applied research across the functional areas of business. Its primary goal is to disseminate the results of new and original scholarly activity to a broad audience consisting of university faculty, business executives, consultants, and government managers. The Journal also acts as a bridge between the academic and business communities.

Subscriptions

The *Journal of Managerial Issues* is published quarterly (spring, summer, fall, winter). Subscriptions are $95/year for individuals and $115/year for institutions. International subscriptions are $190/year. Please make check payable to "PSU/*Journal of Managerial Issues*" and send it to the address below, attention Ms. Irene Robinson.

Manuscripts

Manuscripts submitted for consideration are welcome. Send an e-mail file attachment to JMI@pittstate.edu. To help defray the administrative costs, a payment of $100 (for up to 25 pages, $30 for every page over 25 to cover extra production costs) will be due if your article is accepted for publication. This is not a submission fee. There is no charge if your paper is not accepted for publication in *JMI*. See Manuscript Style Guide (inside back cover) for additional requirements.

Send Correspondence to:

Sang-Heui Lee, Editor-in-Chief
Journal of Managerial Issues
Pittsburg State University, 1701 S. Broadway, Pittsburg, KS 66762
E-mail: slee@pittstate.edu
Send submissions to JMI@pittstate.edu
Phone: 620-235-4597 or 620-235-4547
(http://www.journalofmanagerialissues.com)

ISSN 1045-3695

Journal of Managerial Issues

Volume XXXII Number 1 Spring 2020

Editorial Policy

The *Journal of Managerial Issues* seeks to publish the highest quality business research across the functional areas of business. The *Journal's* emphasis is on empirical work, though conceptual and methodological works are occasionally accepted. The overriding criterion for publication in the *JMI* is the knowledge readers will gain about the theory and practice of business management. The *JMI* is intended to foster research from a variety of business school and related disciplines. As such, the *JMI* is open to, and encourages a wide range of emerging and established methods, approaches, and problem areas within the domain of business research. Articles accepted for publication must present substantive and significant managerial implications.

Articles published are not necessarily the opinions of the *JMI*, the editors, or Pittsburg State University. Statements by authors appearing in the *Journal* are the exclusive responsibility of the authors themselves. Authors are allowed to express their opinions so as to encourage and stimulate a free flow of ideas.

Each paper submitted to the *JMI* is processed as follows:

1. Receipt of the manuscript is acknowledged promptly by a letter from the Editor. An initial screening is made by the editors to determine the suitability of the article. Key factors considered are the quality of the research methodology, the ability to communicate to university faculty and business leaders, and, most important, the potential contribution to the advancement of knowledge directly related to the theory of organizations and business practice.
2. Assuming the manuscript is suitable for consideration by the *JMI*, it is assigned to two "external" referees, according to its functional and methodological content. Manuscripts are "double-blind" reviewed by referees selected by the Editor.
3. Each referee provides a careful evaluation of the manuscript, makes a recommendation to the Editor, and supplies comments for the author.
4. The Editor appraises the reviews and makes a decision regarding publication of the article. Every effort is made to obtain prompt reviews and make early decisions regarding publication or suggested revision of the manuscript.

Circulation includes university faculty and administrators, collegiate and public libraries, business executives, and government managers.

EDITORIAL REVIEW BOARD

Editorial Review Board

(continued)

Strategy and Policy (con't)

Allen C. Amason
Georgia Southern University
Diana Bilimoria
Case Western Reserve University
Aaron Buchko
Bradley University
Charles M. Byles
Virginia Commonwealth University
Derrick D'Souza
University of North Texas
David Noble
University of Connecticut
John A. Pearce II
Villanova University
Kathleen Rehbein
Marquette University
Chamu Sundaramurthy
San Diego State University
Ellen Weisbord
Pace University

Accounting

Edward Douthett, Jr.
George Mason University
Timothy J. Fogarty
Case Western Reserve University
Hubert D. Glover
Drexel University
Kenneth Lambert
University of Memphis
Mahmoud Nourayi
Loyola Marymount University
Eric Press
Temple University

Finance

Thomas H. Eyssell
University of Missouri – St. Louis
Stephen Ferris
University of Missouri – Columbia
Suk Hun Lee
Loyola University of Chicago
Edward D. Zychowicz
Hofstra University

Management Information Systems

John R. Carlson
Baylor University
J. N. D. Gupta
University of Alabama – Huntsville
Anita Lee-Post
University of Kentucky – Lexington
David Paper
Utah State University
Mohan Tanniru
Oakland University
Michael P. Thompson
Brigham Young University

Marketing

Douglas Amyx
Louisiana Tech University
Rolph E. Anderson
Drexel University
J. Scott Armstrong
University of Pennsylvania
Rosemary J. Avery
Cornell University
James S. Boles
University of North Carolina
Isabella Cunningham
University of Texas at Austin
C. Anthony di Benedetto
Temple University
David Fleming
Indiana State University
Mark Johlke
Bradley University
Keun S. Lee
Hofstra University
David Stewart
Loyola Marymount University
R. Dale Wilson
Michigan State University

The *JMI* in Brief

Volume XXXII Number 1 Spring 2020 30th Anniversary Issue

ARTICLES

Volume XXII Number 4 Winter 2010

The current study examines the validity of a multidimensional Person-Environment (PE) fit model proposed by Jansen and Kristof-Brown (2006). The overall aim of the paper is to test the model's factor structure and influences upon outcome measures. A panel of organizational employees from a wide range of companies and locations were asked to complete a survey (n = 1,875) measuring five discrete dimensions of perceptual PE fit (Person-Organization, Person-People, Person-Job, Person-Group, and Person-Vocation) and three outcomes (organizational commitment, intention to leave, and job satisfaction). The first sequence of analysis tested the proposed model using Confirmatory Factor Analysis (CFA) statistical approaches. Model comparisons showed that Jansen and Kristof-Brown's (2006) original model in which the five dimensions of fit coalesce into a multidimensional construct was a poor fit with the data, but that a model in which the five dimensions of fit operate independently fit the data well. The second sequence of analysis found that the model without the multidimensional construct strongly predicted the outcomes of commitment, job satisfaction, and intention to leave. This paper discusses the implication of this research in relation to the PE fit literature.

This study addresses an important ongoing debate in the management literature about the relationship between accounting and market measures of firm financial performance, namely, whether it is sufficiently strong so that researchers can treat them as equivalent, interchangeable indicators of firm financial performance. Using annual financial data from all the publicly traded U.S. firms in the COMPUSTAT database from 1961 to 2008, this study finds that, although measures of accounting profitability and market performance are positively correlated across industries, their covariance is less than 10% and thus provides no evidence of convergence. It also finds that accounting profitability

and market performance do not load on a higher-order factor, and that in only a very few industries are they correlated at a high level ($r > 0.50$). The findings have important implications for the conception and measurement of firm financial performance in future research.

Volume XVII Number 3 Fall 2005

Research on organizational knowledge indicates that the level of an organization's complex knowledge determines its capability to continuously innovate and remain competitive. Since individuals are often the originators of organizational knowledge, interpersonal complex knowledge sharing becomes a significant organizational process. An important issue in this process is the presence of trust, which facilitates complex knowledge sharing between individuals. In view of that, this study investigates the role of trust in knowledge sharing between individuals within a team setting. With data analysis results, this article shows how affect-based trust and cognition-based trust affect complex knowledge sharing between individuals working within teams.

Volume XVI Number 3 Fall 2004

This study introduces intellectual capital into the strategic human resource management literature in an effort to start to fill in the "black box" between human resource (HR) activities and organizational performance. Results from a multi-industry survey of 208 organizations indicate that different HR activities are related to three distinct forms of intellectual capital – human, social, and organizational – which, in turn, are related to organizational performance. As such, the study illustrates intellectual capital's mediating role between HR activities and organizational performance.

Letter from the Editor

It is my pleasure to announce the publication of this special issue of JMI for its 30th anniversary.

For the last three decades, the collective efforts of authors, reviewers, and editors has accomplished today's JMI success. There has been a great amount of quality research published in JMI. However, because of the space limit, I could only select two previous articles that had the most citations in their respective decade, totaling six papers. We hope that this collection of the Journal's reminiscences, which are continually cited, will provide you with the joy of reading the superlative artifacts.

Undoubtedly, the reviewers have been the main contributors to the journal's quality publication throughout the years. In his letter to me, the founding editor of JMI, Dr. Charles Fischer, said, "There were even many times when those that had their manuscript rejected would thank us for prompt and constructive/helpful feedback." I deeply appreciate the reviewers' help.

Special thanks to Associate Editor Irene Robinson for her ceaseless and incomparable dedication to JMI and this special issue.

Please join me in congratulating this very special issue of JMI!

Sang-Heui Lee
Editor-in-Chief

.

JOURNAL OF MANAGERIAL ISSUES
Vol. XXXII Number 1 Spring 2020

Testing a Multidimensional Theory of Person-Environment Fit

Julian A. Edwards
Research Fellow
The Open University -- Milton Keynes UK

Jon Billsberry
Professor of Organizational Behavior
Coventry University -- Coventry UK

This paper explores the multidimensionality of employees' fit. In particular, the aim of the present paper is to test the long-term temporal stage of the multidimensional model of Person-Environment (PE) fit advanced by Jansen and Kristof-Brown (2006) empirically.

The notion of multidimensional fit has emerged as a reaction to the difficulty that researchers have had pinning down the concept of fit. Whereas most people understand what being a "misfit" is like, e.g., not getting on with people, feeling like an outsider, a desire to leave the organization (Schneider, 1987) or looking for bolt holes in which to shelter from the storm (Van Vianen and Stoelhorst, 2007), they do not naturally have an understanding of what being a "fit" is (Billsberry *et al*., 2005). Researchers have had similar difficulties conceptualizing fit despite efforts to provide a definition of the term (Cable and Edwards, 2004; Harrison, 2007; Kristof, 1996; Ostroff and Schulte, 2007). This has resulted in considerable variation in the way that researchers conceptualize fit in their studies (Harrison, 2007). Consequently, "fit" is regularly termed an "elusive" concept and one that defies definition (Edwards and Shipp, 2007; Harrison, 2007; Jansen and Kristof-Brown, 2006; Judge and Ferris, 1992; Kristof, 1996; Rynes and Gerhart, 1990).

Deconstructed, Undeconstructed, and Reconstructed Fit

Management scholars have been interested in the interaction of workers and the environments they inhabit for over 100 years (Parsons, 1909; Schneider, 1987). This domain, which is called person-environment (PE) or organizational fit, has witnessed a large number of empirical studies and experiments, but researchers have struggled to

define the "elusive criterion of fit" (Jansen and Kristof-Brown, 2006; Judge and Ferris, 1992). The problem is that both people and the environments they inhabit are multidimensional. These dimensions include "internal" factors such as personality, values, attitudes, skills, emotions, and goals, and "external" factors such as job requirements, expected behavior, organizational culture, pay structures, and collegiality. Researchers have been faced with the seemingly impossible problem of capturing all of the internal and external dimensions and mapping how they fit together to influence behavior. In short, there are many forms of fit (Edwards and Shipp, 2007), researchers do not know if all forms of fit have been identified (Billsberry *et al*., 2005), and it is not known how they all fit together (Jansen and Kristof-Brown, 2006).

As the task of identifying, capturing, and combining all of the various factors influencing fit is so massive, most studies have theorized a link between singular aspects of the person and the environment. Chatman (1991), for example, focused on values and showed that the congruence of individual and organizational values predicts job satisfaction, organizational commitment, and tenure. Turban and Keon (1993) found that people with a high need to achieve were more attracted to organizations that offered a merit-based reward structure (i.e., those that rewarded performance over seniority) than people with a low need to achieve. They also showed that people with low self-esteem were more attracted to decentralized organizational structures (and larger firms) than people with high self-esteem, thereby suggesting that people are attracted to organizations that mirror their personality. In addition to values and personality, other personal factors that have been explored include goals, interests, and attitudes.

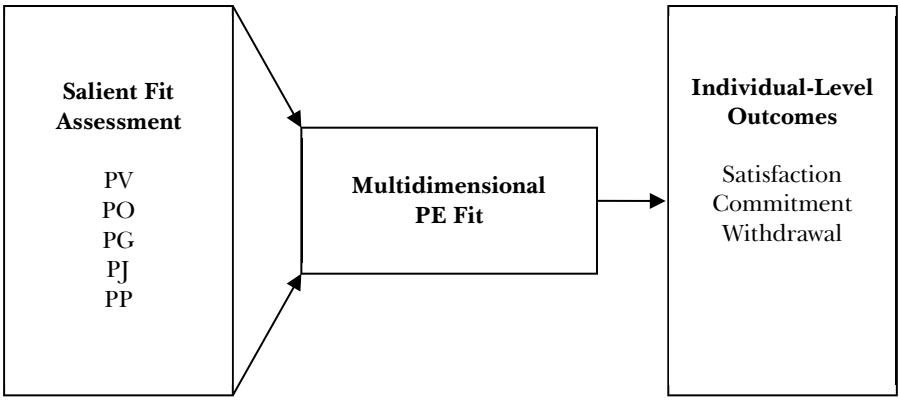
But it is on the environmental side of the fit equation where most attention has been directed. For example, Caldwell and O'Reilly (1990) focused on Person-Job (PJ) fit and demonstrated that a fit can be identified between employees and the type of work and also with the skills they use. Other researchers considered the fit between people and their vocations (PV fit; Holland, 1985; Moos, 1987), their colleagues (variously called Person-Person, Person-People (PP), and Person-Individual fit; Graves and Powell, 1995), their work groups (PG; Adkins *et al*., 1996; Barsade *et al*., 2000; Becker, 1992; Hobman *et al*., 2003), their organizations (PO; Chatman, 1991; O'Reilly *et al*., 1991; Vancouver and Schmitt, 1991), and their supervisors (PS; Adkins *et al*., 1994). In addition to variations in the way that the person and the environment parts of the fit equation have been deconstructed, there is also great variety in the constructs and behaviors that have been predicted in fit research (Kristof-Brown *et al*., 2005). The most commonly operationalized are job satisfaction, tenure, staff turnover, organizational commitment, organizational citizenship behaviors, performance, and absenteeism (Kristof-Brown *et al*., 2005).

These studies represent the mainstream of research into organizational fit. They are based on a theoretical deconstruction of the concept of "fit." They involve the comparison of one aspect of the person with one aspect of the environment to predict a behavioral or psychological outcome. The legacy of these studies is a mass of findings involving many individual factors (personality, values, goals, etc.), even more environmental factors (jobs, organizations, vocations, etc.), and a myriad of dependent variables (job satisfaction, tenure, staff turnover, etc.). An additional factor that further deconstructs "fit" is variation in the way that "fit" is conceptualized and measured. Harrison (2007: 389) recorded "similarity, congruence, alignment, agreement, composition, compilation, configuration, matching, and interactionist" forms of conceptualization. Such is the bewildering array of definitions, methods, and findings that some scholars have begun to wonder what this thing called fit is. Drawing a retail analogy, Harrison (2007: 389) stated, "I'm lost in the supermarket of fit research, and I haven't yet stepped inside!"

Two responses have emerged to resolve the definitional problems inherent in the deconstructed mainstream approach. The first of the responses is to reconstruct fit from the various components that have been theoretically separated out. This approach is collectively known as multidimensional fit. Three motivations drive such work. First, as mentioned earlier, one goal is to move the field back to people's overarching sense of fit (or misfit) by attempting to unite the various forms of fit. Second, by combining different dimensions of fit as predictor variables, researchers hope to find more predictive power. Third, various scholars (e.g., Jansen and Kristof-Brown, 2006; Sekiguchi, 2004, 2007) suggested that the different dimensions of fit play different roles and have different emphases at different points of the employment relationship. For example, Jansen and Kristof-Brown (2006) predicted that PJ and PP forms of fit will be evident during job search, while PO and PJ forms of fit will be prominent during socialization. Kristof-Brown *et al*. (2002) conducted an empirical study in which they showed that PO, PG, and PJ forms of fit simultaneously predicted work satisfaction. This study furthered understanding of how these forms of fit influence outcomes, but it shifted attention away from any overall, multidimensional model of fit (Law *et al*., 1998).

The most ambitious contribution on multidimensional fit came from Jansen and Kristof-Brown (2006) who developed a model encompassing five different dimensions of fit (PV, PO, PG, PJ, and PP) and five stages of employment (Pre-recruitment, Recruitment/ Job Search, Selection/Job Choice, Socialization, and Long-term Tenure). In brief, they predicted that the five forms of fit (PV, PO, PG, PJ, and PP) combine to comprise multidimensional PE fit. Their conjecture is that these different dimensions of PE fit have more or less salience at different points in someone's employment. Before thinking about joining an organization, PV is relevant. During job search, PJ and PP fit become important and PJ and PO come to the fore during selection. During socialization, PO and PJ are predicted to be the most salient and during long-term tenure, all five forms are relevant (this final phase of the cycle is the focus of this paper). During long-term tenure, the authors predicted that multidimensional PE fit will predict the individual-level outcomes of satisfaction, commitment, and withdrawal (see Figure I).

Figure I
Jansen and Kristof-Brown's (2006) higher order multidimensional PE fit model showing long-term tenure relationships



Jansen and Kristof's (2006) model has an integrative design in that it predicts how the various dimensions of fit combine with people's sense of fit. In effect, this model suggests that the multiple dimensions of fit are facets of a single overarching sense of fit. However, as noted earlier, the construct of fit is an elusive concept and as the authors point out, it is unclear how the various dimensions of fit combine, or whether they do combine, to produce an overarching sense of fit. Consequently, an alternative model readily offers itself based on Kristof-Brown *et al*.'s (2002) findings (see Figure II). In this model, there is no overarching sense of fit and instead multiple dimensions of fit remain separate as predictors of the outcomes. Rather than construing multidimensional fit as a reconstruction of various dimensions of fit, this model accepts the logic in the deconstructed approach to fit and assumes that the various dimensions of fit operate separately on behavioral and psychological outcomes.

The second response is to study "fit" as an undeconstructed construct. This undeconstructed form of fit is known as "perceived" fit (also known as "Gestalt fit")and it relates to a person's overall sense of fit to their employing organization. Perceived fit is usually captured via subjective methods, that is, research instruments that allow respondents to report a direct assessment of their compatibility (Kristof *et al*., 2005). For example, a person might be asked to say how much they agree with a statement like, "My personal values match my organization's values and culture" (Cable and DeRue, 2002: 879). Although studies of perceived fit have been derided for their lack of theoretical rigor (e.g., Harrison, 2007), they have maintained a place in PE fit research. This is due to their central role in the theory underpinning organizational fit, such as Schneider's (1987) ASA theory, which talks about employees behaving as a result of their overall sense of fit. For example, "people who do not fit an environment well will tend to leave it" (Schneider, 1987: 442). In addition, a major meta-analysis has shown that perceived fit is a much stronger correlate of behavioral and psychological outcomes than deconstructed forms of fit (Kristof-Brown *et al*., 2005).

Figure II
An alternative model of long-term tenure multidimensional fit assuming no overarching sense of fit

Researchers in the UK used cognitive mapping techniques to explore how the deconstructed dimensions of fit (e.g., PJ, PV, PG, and PP) relate to undeconstructed perceived fit. By asking people to talk about the things that influence their sense of fit, Billsberry *et al*. (2005) showed that perceived fit is much richer than previously expected. In total, the researchers (Billsberry *et al*., 2005; Billsberry *et al*., 2008; Talbot and Billsberry, 2007) found sixteen different dimensions of fit. In addition to the expected dimensions of fit described in the literature, people included work/life balance, extra-work factors, and aspects of the physical environment in their sense of fit. Although their exploratory qualitative methodology shows that undeconstructed fit largely comprises of the known discrete dimensions of fit, their method was unable to provide a definitive breakdown of perceived fit or show how the various deconstructed dimensions of fit coalesce.

The current paper tests both Jansen and Kristof-Brown's (2006) original model (Figure I) and the alternative one presented in Figure II. The purpose of this comparison is to provide insight into the nature of fit. Do people have an overarching sense of fit or are perceptions of fit closely linked to salient features of the organizational environment? Following Jansen and Kristof-Brown (2006), Structural Equation Modeling (SEM) techniques are used to perform the analysis. In addition, this study offers a quantitative follow-up to the qualitative studies of Billsberry and his colleagues (Billsberry *et al*., 2005; Billsberry *et al*., 2008; Talbot and Billsberry, 2007) with the aim of testing their construction of perceived fit.

METHOD

Design, Procedure, and Sample

Participants were recruited via Study Response, an organization based at Syracuse University, which offers researchers access to a database of people willing to complete online questionnaires in return for a small inducement. These respondents are primarily based in the United States, in a broad range of organizations and are thought to be a representative sample of company employees (Buchanan and Smith, 1999; Davis, 2007; Dennis and Winston, 2003; Judge *et al*., 2006; Maurer *et al*., 2007; Piccolo *et al*., 2008; Piccolo and Colquitt, 2006). Maurer *et al*. (2007: 341) described the sample as "a diverse demographic composition," while Dennis and Winston (2003: 456) stated that the database contains "a cross section of the population in terms of age, education, and gender." Respondents in the current study were entered into a drawing to win one of 100 $50 Amazon vouchers. A hotlink to the survey instrument was embedded within email messages that were distributed to participants asking them to complete the online questionnaire. A reminder was sent out one week following the first invitation to participate. The data gathering period closed a week later.

Ten thousand working people primarily based in the U.S. were targeted for the current study. 2,593 of the targeted people completed the online questionnaire (26%). 2,289 were valid responses of which 1,875 remained once they were filtered to remove people who had been employed for less than a year at their current employer or who did not respond to the tenure question. 689 (36.7%) were men and 1,186 (63.3%) were women. Average organizational tenure for employees was seven years and average age was 31 to 35 years.

Measures

Person-Environment Fit. One of the problems preventing researchers from studying multidimensional fit is the difficulty constructing measures that capture all dimensions of fit. Traditionally these have been captured separately and have slightly varying formats. To avoid problems such as combining dissimilar methods, it was decided that a new instrument should be developed to capture multidimensional fit across its various forms. The starting point was the sixteen dimensions of fit in Billsberry *et al*. (2008). These sixteen different dimensions of fit emerged following two in-depth qualitative studies of employees' perceptions of fit. Billsberry *et al*. (2008) employed the causal mapping method outlined in Billsberry *et al*. (2005). In this approach, one-to-one interviews are conducted in which participants are asked to talk about their "sense of fit." To help them do this, they are presented with a large piece of paper with the word "Fit" in the center. They are then asked to embellish the paper with factors that influence their sense of fit thereby creating a causal map of their fit. The benefits of this approach are it helps the participants uncover causes that may have been unconsciously held, triggers new ideas through a process called "spreading activation" (Daniels *et al*., 1995), allows participants to check that their description of their fit accords with their experience of the construct by visually scanning the map, and, crucially for an exploratory design, allows participants to describe their fit free from the researchers' preconceptions. In their first in-depth study, Billsberry *et al*. (2008) conducted these in-depth sessions with 63 members of a higher education establishment. Afterwards, their second study sought to validate their emerging definition of fit with further sessions with 38 people in six organizations in different sectors and geographical locations. After the maps were coded for the type of fit being described, fifteen different dimensions of fit were revealed (nature of work, skills and knowledge, behavior, colleagues, relationship, manager, physical working environment, terms and conditions of employment, opportunities for growth and development, opportunities for achievement, organizational behavior, organizational values, organizational mission, organizational reputation, and work/life balance). To be included in the typology, a type of fit had to appear on at least 20% of the maps.

For the current study, three experienced organizational fit researchers reviewed the fifteen dimensions of fit and selected nine of them that aligned with Jansen and Kristof-Brown's (2006) multidimensional model. In addition, vocation fit, which had been mentioned by fewer than ten of Billsberry *et al.*'s (2008) participants, was added so that all dimensions of fit in the model could be captured. Then, following the advice of Nagy (2002), each dimension of fit was constructed as a single item for use on a Likert-style questionnaire (e.g., "How do the organization's values fit with the values you think it should hold?"). Participants' answers were recorded on a 1 (Strongly Disagree) to 5 (Strongly Agree) Likert scale. PO fit was represented by four dimensions (Organizational Values (OV), Terms and Conditions of Employment (TCE), Opportunities for Growth and Development (OGD), and Physical Working Environment (PWE); Cronbach's alpha = 0.81). PP fit was represented by two dimensions (Relationship (RE) and Individual Behavior (IB) (Cronbach's alpha = 0.71). PJ fit was also represented by two dimensions (Skills and Knowledge (SK) and Nature of Work (NW) (Cronbach's alpha = 0.70). PG fit and PV fit were both represented by one dimension each – Colleagues (CO) and Vocation (VOC). This approach of using single-item measures follows the recommendations of Billsberry *et al.* (2005), Billsberry *et al.* (2008), and Talbot and Billsberry (2007), and has the benefit of capturing the essence of the construct which is

particularly helpful when the precise construction of the construct is unknown (Nagy, 2002; cf. Churchill, 1979).

Organizational Commitment. Commitment was measured using four questions from Hult's (2005) organizational commitment measure which is originally derived from the "Porter scale" (Porter *et al*., 1974). Participants were asked to report their responses on a 1 (Strongly Disagree) to 7 (Strongly Agree) Likert scale. An example of an item is "I am proud to be working for my organization." For purposes of the current study, the four questions have been averaged to produce an overall score for organizational commitment. The Cronbach's alpha reliability coefficient for the five items is 0.80.

Intention to Leave. In the present study, withdrawal has been represented by "intention to leave." Three items were used to measure intention to leave adapted from Hom *et al*. (1984). Respondents' answers were reported on a 1 (Strongly Disagree) to 7 (Strongly Agree) Likert scale. A sample item is "I intend to leave the organization in the next 12 months." The three items were averaged to produce one single overall measure of intention to leave. The Cronbach's alpha reliability coefficient for the three items is 0.83.

Job Satisfaction. Five items measuring facets of job satisfaction from Nagy (2002) were chosen for the current study. Respondents' answers were reported on a 1 (Strongly Disagree) to 7 (Strongly Agree) Likert scale. An example of an item is "My work compares well to the type of work I would like to do." Principal Components Analysis (PCA) was conducted using Varimax rotation to test the factor structure of the five different facets of job satisfaction. One component with an eigenvalue greater than 1.0 was generated with a variance of 56.18. Since the PCA indicates that the five items are all measuring a similar concept, they have been scored into one overall measure of job satisfaction. The Cronbach's alpha reliability coefficient for the five items is 0.80.

Analysis

The analysis in the current study follows the following procedure. Initially, preliminary analysis and a correlation table will be produced showing the relationships between all variables in the study. This will be followed by two Confirmatory Factor Analyses (CFA) to test the factor structure of the multidimensional PE fit model proposed by Jansen and Kristof-Brown (2006) and the alternative model. Structural Equation Modeling analysis will then test the predictive influence of the best fitting PE fit model upon the three outcome measures included in the present study (commitment, intention to leave, and job satisfaction).

RESULTS

Preliminary Analysis

For many years, researchers in organizational behavior have raised concerns about common method variance biases (Williams *et al*., 1989). It has been suggested that relationships between self-report measures can become exaggerated due to measurement method (Kline *et al*., 2000). In order to test for the presence of method variance bias within the current study, a sequence of statistical approaches were undertaken. First, Harman's single-factor test was performed. This test is one of the most widely used approaches by researchers (Podsakoff and Organ, 1986; Podsakoff *et al*., 1984). All variables in the study were entered into an exploratory factor analysis to examine the unrotated factor solution

(Anderson and Batemen, 1997). No single factor emerged from the analysis indicating that there is no substantial amount of common method variance present in the current data. Confirmatory Factor Analysis using the single-factor technique was also performed as a more sophisticated test. This test also failed to produce a single factor from the analysis. Following this, a further test controlling for the effects of a single unmeasured latent method factor was conducted as recommended by Podsakoff *et al*. (2003). This test has been used in a number of studies by adding a first-order factor with all other measures (e.g., Carlson and Kacmar, 2000; Podsakoff *et al*., 1990). Findings from the current study revealed that the variance explained by the method factor is low and correlations among constructs are similar with or without the method factor included, thus indicating that common method variance is not a serious bias.

Descriptive Statistics

Scale means and standard deviations for all measures used in the current study are shown in Table 1. All multidimensional fit scales and outcome measures correlate at the 0.01 significance level. All five fit measures correlated positively with organizational commitment and job satisfaction, indicating that greater levels of PE fit are associated with greater levels of commitment and job satisfaction. All five measures of PE fit are also significantly and negatively related to intention to leave, suggesting that greater levels of PE fit are associated with lower levels of intention to leave. Additional analyses of gender differences demonstrated no significant differences.

Confirmatory Factor Analysis

Confirmatory factor analysis was performed to test the multidimensional PE fit model put forward by Jansen and Kristof-Brown (2006) using data from the current study. Maximum likelihood estimation to the covariances using AMOS 17.0 was applied to conduct the current CFA (AMOS; Arbuckle and Wothke, 1999). The Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA) were used to test model fit (Tabachnick and Fidell, 2006).

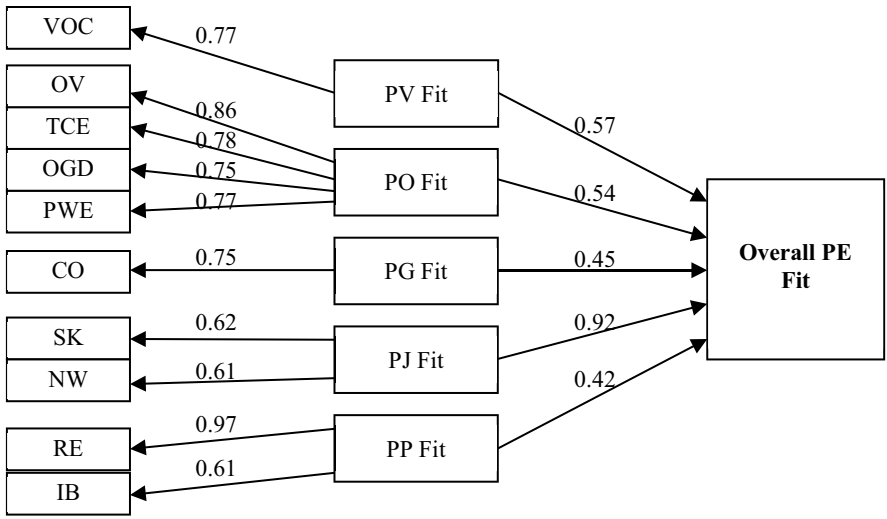
Table 1
Descriptive statistics and correlations for multidimensional person-environment fit, commitment, intention to leave and job satisfaction

	Subscales	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
1.	Person-Organization Fit	3.70	0.88	(0.81)							
2.	Person-People Fit	3.80	0.89	0.56	(0.71)						
3.	Person-Job Fit	4.06	0.92	0.50	0.35	(0.70)					
4.	Person-Group Fit	3.81	1.03	0.53	0.68	0.35	(-)				
5.	Person-Vocation Fit	3.76	1.12	0.70	0.51	0.54	0.45	(-)			
6.	Commitment	3.57	1.74	0.53	0.31	0.39	0.30	0.49	(0.80)		
7.	Intention to Leave	4.10	1.66	-0.48	-0.31	-0.40	-0.30	-0.46	-0.52	(0.83)	
8.	Job Satisfaction	5.13	1.41	0.62	0.41	0.70	0.41	0.62	0.60	-0.57	(0.80)

All correlations are significant at the 0.01 level.

Model 1. This model is the most direct replication of Jansen and Kristof-Brown's (2006) model for temporal stage of long-term tenure possible with this data. Ten PE fit observed forms of fit are used to construct five independent latent factors (PO, PP, PJ, PG, and PV), which in turn predict a dependent latent variable reflecting the single overall unidimensional aspect of the PE fit model. The authors feel this model best represents the multidimensional theory of PE fit described by Jansen and Kristof-Brown (2006). The chi-square statistic produced a statistically significant value of 4244.90 (df = 34, n = 1,875, $p < 0.01$) and poor goodness-of-fit statistics (CFI = 0.47, GFI = 0.73, NFI = 0.47, and RMSEA = 0.24). Model 1 shows the ten factor loadings on the five multidimensional fit latent variables as well as the five loadings on the single overall dimension of PE fit. The rule of thumb is that with the CFI, GFI, and NFI indices, scores of 0.95 or greater are required to adjudge that the data fit the model well (0.90 is sometimes seen as acceptable). With RMSEA, a score of 0.05 is required for a well-fitting model. The fit indices for Model 1 are well below these thresholds indicating that this model *does not* fit the data in the current study (Hu and Bentler, 1999; Tabachnik and Fidell, 2006).

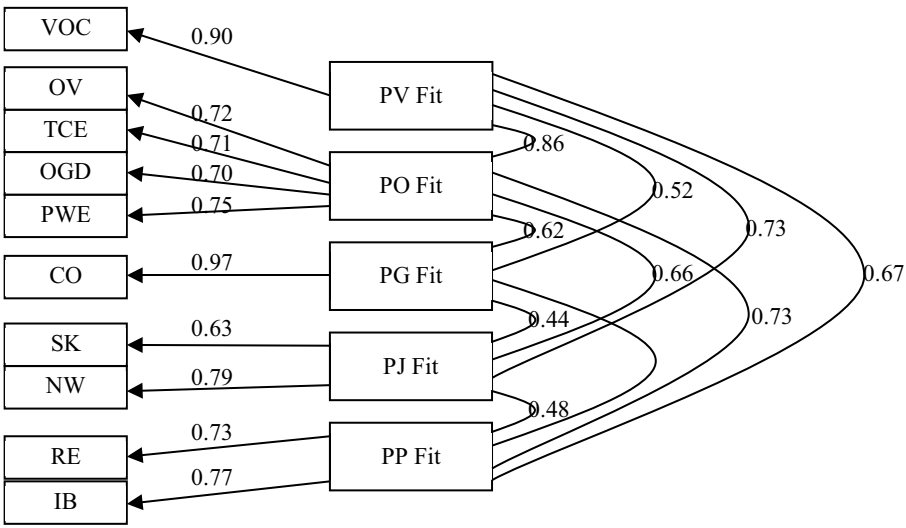
Model 1
Higher–order multidimensional model of person-environment fit



Notes: OV = Organizational Values, TCE = Terms and Conditions of Employment, OGD = Opportunities for Growth and Development, PWE = Physical Working Environment, RE = Relationship, IB = Individual Behavior, SK = Skills and Knowledge, NW = Nature of Work, CO = Colleagues, VOC = Vocation. The arrows in this diagram leading to the five forms of fit are in the opposite direction to the hypothesized models to reflect that in this study these are independent latent, rather than observed, variables. This way of displaying latent variables is in accordance with guidance from Law *et al*. (1998).

Model 2. This model represents an alternative multidimensional model of PE fit without the overarching construct of multidimensional PE fit. Ten observed dimensions load on five multidimensional latent factors (PO, PP, PJ, PG, and PV). This model is similar to Model 1, however, without the higher second-order unidimensional facet of PE fit. Chi-square exhibited a statistically significant value of 177.9 (df = 27, n = 1,875, $p < 0.01$) and excellent goodness-of-fit statistics (CFI = 0.98, GFI = 0.98, NFI = 0.98, and RMSEA = 0.06). Model 2 shows the ten factor loadings on the five multidimensional PE fit latent variables as well as the correlations between the five latent factors. Results from this analysis indicate that Model 2 *does* fit the data in the current study (Hu and Bentler, 1999; Tabachnik and Fidell, 2006).

Model 2
Multidimensional model of person-environment fit



Notes: OV = Organizational Values, TCE = Terms and Conditions of Employment, OGD = Opportunities for Growth and Development, PWE = Physical Working Environment, RE = Relationship, IB = Individual Behavior, SK = Skills and Knowledge, NW = Nature of Work, CO = Colleagues, VOC = Vocation. The arrows in this diagram leading to the five forms of fit are in the opposite direction to the hypothesized models to reflect that in this study these are independent latent, rather than observed, variables. This way of displaying latent variables is in accordance with guidance from Law *et al*. (1998).

Model Comparisons. The chi-square difference test allows the two alternative multidimensional PE fit models to be examined to test which model best fits the data. Comparing individual model chi-square values and associated number of degrees of freedom with the corresponding difference in chi-square and number of degrees of freedom of the competing model allows the test of difference between different models. Lower chi-square values are an indication of better fit.

The following comparison analysis is between Model 1 and Model 2. Chi-square difference test produced a significant finding (Model 1 vs. Model 2: χ^2 (df = 7) = 4067.00, p > 0.001). This indicates that Model 2 better fits the data than Model 1. This result is based on Model 2's superior chi-square value and goodness of fit indices.

Overall, the above comparison analysis shows that Model 2 best represents the multidimensional model of PE fit proposed by Jansen and Kristof-Brown (2006).

Outcome Model Analysis

The next stage of analysis is to examine best fitting Model 2's predictive influence on three outcomes. Three series of analysis were performed to test the effect of Model 2's multidimensional PE fit factor structure upon organizational commitment, intention to leave, and job satisfaction. This analysis is again based on Jansen and Kristof-Brown's (2006) proposed model.

Organizational Commitment. A model with structural path arrows emanating from the five multidimensional PE fit latent variables (Model 2) to single outcome measure organizational commitment was tested. A chi-square test resulted in a statistically significant value of 263.62 (df = 33, n = 1,875, p < 0.01) and very good fit index statistics (CFI = 0.97, GFI = 0.98, NFI = 0.97, and RMSEA = 0.06). Results from this analysis indicate that the best fitting multidimensional Model 2 with five paths predicting organizational commitment is a good fit to the data in the current study (Hu and Bentler, 1999; Tabachnik and Fidell, 2006). Table 2 shows the five individual regression weights for this model. It can be observed that PO, PP, and PJ all provide significant regression weights; however, PG and PV do not.

Table 2
Best fitting multidimensional model of person-environment fit standardized regression weights for outcomes

Fit Dimensions	Organizational Commitment	Intention to Leave	Job Satisfaction
Person-Organization Fit	0.58 *	-0.41 *	0.24 *
Person-People Fit	-0.21 *	0.05	-0.03
Person-Job Fit	0.21 *	-0.29 *	0.50 *
Person-Group Fit	0.05	0.03	0.02
Person-Vocation Fit	0.11	-0.09	0.13

Note: * p <0.001

Intention to Leave. A second outcome model with five structural paths from Model 2 predicting intention to leave was examined. A statistically significant chi-square value of 197.01 was produced (df = 33, n = 1,875, p < 0.01) with excellent goodness-of-fit statistics (CFI = 0.98, GFI = 0.98, NFI = 0.98, and RMSEA = 0.05), indicating that Model 2 with five paths predicting intention to leave fits the data well. The regression weights produced for this model are shown in Table 2. Two significant regression weights were found for PO and PJ fit, but not for PP, PG, and PV.

Job Satisfaction. The final outcome model explores best fitting multidimensional PE fit Model 2's predictive links to the outcome measure of job satisfaction. Chi-square and goodness-of-fit statistics for the current model exhibit a good fit to the data: χ^2 (33, n =

1,875) = 367.09, p < 0.01, CFI = 0.97, GFI = 0.97, NFI = 0.96, and RMSEA = 0.08). Findings indicate that best fitting Model 2 with five paths predicting job satisfaction is a good fit to the data. Table 2 shows the five predictive regression weights for this model, which reveal that PO and PJ all offer significant regression weights, whereas PP, PG, and PV do not.

No possible chi-square difference test model comparison analysis could be statistically conducted between the three outcome models. Differences in models are due to changes in outcome variables, not in degrees of freedom. Instead, the RMSEA fit index (Browne and Cudeck, 1993) will be used to compare models. This has the ability to order non-nested models from a single data set from best fitting to worst fitting, with lower values indicating greater fit (Maruyama, 1998). It can be observed from Table 3 that best fitting multidimensional PE fit Model 2's best path prediction of an outcome is intention to leave, followed by organizational commitment and then job satisfaction. This is evident in the intention to leave outcome model's greater goodness-of-fit statistics and smaller chi-square and RMSEA values.

Table 3
Goodness-of-fit statistics between best fitting multidimensional model of person-environment fit and outcomes

Model	χ^2	df	CFI	GFI	NFI	RMSEA
Commitment	263.62	33	0.97	0.98	0.97	0.06
Intention to Leave	223.27	33	0.98	0.98	0.98	0.05
Job Satisfaction	367.09	33	0.97	0.97	0.96	0.08

Note: * p <0.001

DISCUSSION

To summarize, the present study tested two different models that conceptualize how dimensions of fit combine to influence the individual-level outcomes of commitment, intention to leave, and satisfaction. This was done with employees who have spent at least one year in their current organizations and through perceived fit methodology. The data show that the model advanced by Jansen and Kristof-Brown (2006), which posits that five dimensions of fit combine to create a multidimensional fit construct, is not the best representation with the current sample. Instead, the data support an alternative model with the separate forms of fit influencing the outcomes of commitment, intention to leave, and job satisfaction directly.

These results suggest something quite important, namely, employees who have been employed by their organizations for a year or more do not have an overarching sense of fit. Instead, employees make fit assessments to various aspects of the organizational environment such as their jobs, the people they work with, and the overall organization. These do not appear to coalesce into an overarching sense of fit before influencing commitment, intention to leave, and job satisfaction, and instead operate separately on the outcomes. This finding explains why people have difficulty responding to the question "How well do you fit?" (Billsberry *et al*., 2005; Talbot and Billsberry, 2007) but can respond more quickly to questions about how they fit their jobs, colleagues or employers.

While these findings cast doubt on whether employees have an overarching sense of fit, it should be remembered that this study focused on people who had been employed for at least a year. This is just one part of Jansen and Kristof-Brown's (2006) model of multidimensional fit, which itself varies temporally and during different phases of the employment relationship. Their hypothesized construct of multidimensional fit might occur at other times. One of these occasions might be during the pre-entry phases of recruitment/job search and selection/job choice. During both of these phases, the word "fit" readily enters people's language and appears important to their decision-making (Cable and Judge, 1996, 1997). Applicants ask themselves, "Will I fit in?" and organizational selectors ask, "Will this person fit in?" Hence, the concept of "fit" comes alive for them and the way that this phrase referring to an overarching sense of fit enters common parlance may be an indication that it is mirroring the appearance of a salient psychological construct.

Extending this thinking a bit further, it begs the question of why an overarching sense of fit might become non-salient for people who have worked in the organization for more than a year. One answer might be that during the first year or so of employment, new hires are seeking out information about the new organization to assess their fit (Chatman, 1991). Once they have determined that they fit, the construct becomes non-salient and instead they shift their focus to the more dynamic aspects of the organizational environment, such as their fit to their jobs and people. At this point, Schneider's analysis becomes relevant. He argues that "while people may be attracted to a place, they may make errors, and finding they do not fit, they will leave" (1987: 442). In effect, an overarching sense of fit becomes relevant during employment when it is in the negative, i.e., people leave when they become a misfit. As research has shown, people who label themselves "misfits" have a clear understanding of their misfit (Talbot and Billsberry, 2007). In such cases, Jansen and Kristof-Brown's (2006) model with its multidimensional PE fit construct may capture the underlying psychological processes. It would be particularly interesting to see empirical tests of the model during the pre-hire phases of employment and with misfits.

One unexpected finding of the study was the differing strength of the various dimensions of fit in predicting the outcomes. In particular, PP and PG fit had very low standardized regression weights and were almost negligible in the equations, especially with intention to leave and satisfaction. One explanation of these findings is that while PO and PJ dimensions of fit refer to an individual's assessment of fit to singular aspects of the organizational environment, there could be multiple people and groups that employees fit to. There are already studies in the literature that tease out person-supervisor (PS) fit and presumably people have other salient relationships as well (Kristof-Brown *et al*., 2005), for example, the person they work next to, customers, staff, and other individuals that they encounter regularly. All of these may have salience, but the model collapses them all into one salient fit assessment. A stronger model might be forthcoming if respondents are allowed to enter all of their salient relationships (both to individuals and groups of individuals) into the model rather than simply overarching PP and PG fit assessment.

Limitations

The main limitation of the present study is its cross-sectional design. The next step is to replicate the findings with longitudinal data. In addition, Jansen and Kristof-Brown's (2006) model has temporal dimensions involving changing salience of fit

assessments through different stages of the employment relationship. These require a longitudinal design to test fully. The cross-sectional design has also necessitated the use of latent variables for the dimensions of fit and overarching fit. Capturing these three forms of fit (individual components, dimensions of fit, and overarching fit) in one study would have lead to insurmountable problems associated with common method error. A three-step longitudinal design would allow for the three different forms of fit to be captured separately avoiding this problem. Another limitation is that the study employed self-reported measures for all the concepts. As a result, some of the results might be influenced by social desirability effects. Self-reported measures have the benefit of being more economical than other types of data collection, but more importantly they are more proximal to people's behavior (Cable and Judge, 1996, 1997; Kristof, 1996), which also explains why this study opted to conceptualize fit in perceived terms rather than in an objective or actual manner. Nevertheless, it would be interesting to see the study replicated with objective fit data that allows for the separation of P and E sides of the fit equation; thus, the differing contributions of the two sides and the interaction between them can be explored.

CONCLUSION

Jansen and Kristof-Brown (2006: 206) conclude their paper with the following line, "As the research on PE fit accumulates, it becomes apparent that increasing our understanding of single dimensions of fit, in isolation of time and context, is no longer sufficient." The current study's data reaffirm this conclusion, but rather than supporting the existence of an overarching multidimensional construct of fit, it shows the single dimensions of fit operating simultaneously and directly on the outcomes of commitment, satisfaction, and intention to leave.

References

Adkins, C. L., C. J. Russell, and J. D. Werbel. 1994. "Judgments of Fit in the Selection Process: The Role of Work Value Congruence." *Personnel Psychology* 47: 605-623.

————, E. C. Ravlin, and B. M. Meglino. 1996. "Value Congruence between Co-workers and Its Relationship to Work Outcomes." *Group and Organization Management* 21: 439-460.

Anderson, L. M. and T. S. Bateman. 1997. "Cynicism in the Workplace: Some Causes and Effects." *Journal of Organizational Behavior* 18: 449-469.

Arbuckle, J. L. and W. Wothke. 1999. *Amos 4.0 User's Guide*. Chicago: Smallwaters Corporation.

Barsade, S. G., A. J. Ward, J. D. F. Turner, and J. A. Sonnenfeld. 2000. "To Your Heart's Content: A Model of Affective Diversity in Top Management Teams." *Administrative Science Quarterly* 45 (4): 802-837.

Becker, T. E. 1992. "Foci and Bases of Commitment: Are They Distinctions Worth Making?" *Academy of Management Journal* 35: 232-244.

Billsberry, J., V. Ambrosini, J. A. Edwards, J. Moss-Jones, P. J. G. Marsh, N. van Meurs, and D. A. L. Coldwell. 2008. "Three Empirical Studies Exploring Multidimensional Fit." Paper presented at the British Academy of Management annual conference, Harrogate (paper available upon request).

————, ————, J. Moss-Jones, and P. J. G. Marsh. 2005. "Some Suggestions for Mapping Organizational Members' Sense of Fit." *Journal of Business and Psychology* 19: 555-570.

Browne, M. W. and R. Cudeck. 1993. "Alternative Ways of Assessing Model Fit." Chapter in *Testing Structural Equation Models.* Eds. K. A. Bollen and J. S. Long. Newbury Park, CA: Sage. pp. 136–162.

Buchanan, T. and J. L. Smith. 1999. "Using the Internet for Psychological Research: Personality Testing on the World Wide Web." *British Journal of Psychology* 90: 125-144.

Cable, D. M. and D. S. DeRue. 2002. "The Convergent and Discriminant Validity of Subjective Fit Perceptions." *Journal of Applied Psychology* 87: 875-884.

———— and J. R. Edwards. 2004. "Complementary and Supplementary Fit: A Theoretical and Empirical Integration." *Journal of Applied Psychology* 89: 822-834.

———— and T. A. Judge. 1996. "Person-Organization Fit, Job Choice Decisions, and Organizational Entry." *Organizational Behavior and Human Decision Processes* 67: 294-311.

———— and ————. 1997. "Interviewers' Perceptions of Person-Organization Fit and Organizational Selection Decisions." *Journal of Applied Psychology* 82: 546-561.

Caldwell, D. F. and C. A. O'Reilly. 1990. "Measuring Person-Job Fit with a Profile-Comparison Process." *Journal of Applied Psychology* 75: 648-657.

Carlson, D. S. and K. M. Kacmar. 2000. "Work Family-Conflict in the Organization: Do Life Role Values Make a Difference?" *Journal of Management* 26: 1031-1054.

Chatman, J. A. 1991. "Matching People and Organizations: Selection and Socialization in Public Accounting Firms." *Administrative Science Quarterly* 36: 459-484.

Churchill, G. A. 1979. "A Paradigm for Developing Better Measures for Marketing Constructs." *Journal of Marketing Research* 16: 64-73.

Daniels, K., L. de Chernatony, and G. Johnson. 1995. "Validating a Method for Mapping Managers' Mental Models of Competitive Industry Structures." *Human Relations* 48: 975-991.

Davis, J. J. 2007. "Consumers' Preferences for the Communication of Risk Information in Drug Advertising." *Health Affairs* 26: 863-870.

Dennis, R. and B. E. Winston. 2003. "A Factor Analysis of Page and Wong's Servant Leadership Instrument." *Leadership and Organization Development Journal* 24: 455-459.

Edwards, J. R. and A. J. Shipp. 2007. "The Relationship between Person-Environment Fit and Outcomes: An Integrative Theoretical Framework." Chapter in *Perspectives on Organizational Fit.* Eds. C. Ostroff and T. A. Judge. New York: Lawrence Erlbaum Associates. pp. 209-258.

Graves, L. M. and G. N. Powell. 1995. "The Effect of Sex Similarity on Recruiters' Evaluations of Actual Applicants: A Test of the Similarity-Attraction Paradigm." *Personnel Psychology* 48: 85-98.

Harrison, D. A. 2007. "Pitching Fits in Applied Psychological Research: Making Fit Methods Fit Theory." Chapter in *Perspectives on Organizational Fit.* Eds. C. Ostroff and T. A. Judge. New York: Lawrence Erlbaum Associates. pp. 389-416.

Hobman, E. V., P. Bordia, and C. Gallois. 2003. "Consequences of Feeling Dissimilar from Others in a Work Team." *Journal of Business and Psychology* 17: 301-325.

Holland, J. L. 1985. *Making Vocational Choices: A Theory of Careers* (2nd Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Hom, P. W., R. W. Griffeth, and C. L. Sellaro. 1984. "The Validity of Mobley's (1977) Model of Employee Turnover." *Organizational Behavior and Human Performance* 34: 141-174.

Hu, L. and P.M. Bentler. 1999. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives." *Structural Equation Modeling* 6: 1-55.

Hult, C. 2005. "Organizational Commitment and Person-Environment Fit in Six Western Countries." *Organization Studies* 26: 249-270.

Jansen, K. J. and A. Kristof-Brown. 2006. "Toward a Multidimensional Theory of Person-Environment Fit." *Journal of Managerial Issues* 18: 193-212.

Judge, T. A. and G. R. Ferris. 1992. "The Elusive Criterion of Fit in Human Resources Staffing Decisions." *Human Resources Planning* 15: 47-67.

Judge, T. A., R. Ilies, and B. A. Scott. 2006. "Work-Family Conflict and Emotions: Effects at Work and at Home." *Personnel Psychology* 59: 779-814.

Kline, T. J. B., L. M. Sulsky, and S. D. Rever-Moriyama. 2000. "Common Method Variance and Specification Errors: A Practical Approach to Detection." *The Journal of Psychology* 134: 401-421.

Kristof, A. L. 1996. "Person-Organization Fit: An Integrative Review of Its Conceptualizations, Measurement, and Implications." *Personnel Psychology* 49: 1-49.

Kristof-Brown, A., K. J. Jansen, and A. E. Colbert. 2002. "A Policy-Capturing Study of the Simultaneous Effects of Fit with Jobs, Groups, and Organizations." *Journal of Applied Psychology* 87: 985-993.

————, R. D. Zimmerman, and E. C. Johnson. 2005. "Consequences of Individual's Fit at Work: A Meta-Analysis of Person-Job, Person-Organization, Person-Group, and Person-Supervisor fit." *Personnel Psychology* 58: 281-342.

Law, K. S., C. Wong, and W. H. Mobley. 1998. "Toward a Taxonomy of Multidimensional Constructs." *Academy of Management Review* 23: 741-755.

Maruyama, G. M. 1998. *Basics of Structural Equation Modeling*. Sage.

Maurer, T. J., M. Lippstreub, and T. A. Judge. 2007. "Structural Model of Employee Involvement in Skill Development Activity: The Role of Individual Differences." *Journal of Vocational Behavior* 72: 336-350.

Moos, R. H. 1987. "Person-Environment Congruence in Work, School, and Health Care Settings." *Journal of Vocational Behavior* 31: 231-247.

Nagy, M. S. 2002. "Using a Single-Item Approach to Measure Facet Job Satisfaction." *Journal of Occupational and Organizational Psychology* 75: 77-86.

O'Reilly, C. A., J. Chatman, and D. F. Caldwell. 1991. "People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit." *Academy of Management Journal* 34: 487-516.

Ostroff, C. and M. Schulte. 2007. "Multiple Perspectives of Fit in Organizations across Levels of Analysis." Chapter in *Perspectives on Organizational Fit.* Eds. C. Ostroff and T. A. Judge. New York: Lawrence Erlbaum Associates. pp. 287-315.

Parsons, F. 1909. *Choosing a Vocation*. Boston, Houghton Mifflin.

Piccolo, R. F., M. Bardes, D. M. Mayer, and T. A. Judge. 2008. "Does High Quality Leader-Member Exchange Accentuate the Effects of Organizational Justice?" *European Journal of Work and Organizational Psychology* 17: 273-298.

Piccolo, R. and J. Colquitt. 2006. "Transformational Leadership and Job Behaviors: The Mediating Role of Core Job Characteristics." *Academy of Management Journal* 49: 327-340.

Podsakoff, P. M., S. B. MacKenzie, R. Moorman, and R. Fetter. 1990. "The Impact of Transformational Leader Behaviors on Employee Trust, Satisfaction, and Organizational Citizenship Behaviors." *Leadership Quarterly* 1: 107-142.

————, ————, J. Y. Lee, and N. P. Podsakoff. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies." *Journal of Applied Psychology* 88: 879-903

———— and D. W. Organ. 1986. "Self-Reports in Organizational Research: Problems and Prospects." *Journal of Management* 12: 531-544.

————, W. D. Todor, R. A. Grover, and V. L. Huber. 1984. "Situational Moderators of Leader Reward and Punishment Behaviors: Fact or Fiction?" *Organizational Behavior and Human Performance* 34: 21-63.

Porter, L. W., R. M. Steers, R. T. Mowday, and P. V. Boulian. 1974. "Organizational Commitment, Job Satisfaction, and Turnover among Psychiatric Technicians." *Journal of Applied Psychology* 59: 603-9.

Rynes, S. L. and B. Gerhart. 1990. "Interviewer Assessments of Applicant "Fit": An Exploratory Investigation." *Personnel Psychology* 43: 13-35.

Schneider, B. 1987. "The People Make the Place." *Personnel Psychology* 40: 437-453.

Sekiguchi, T. 2004. "Toward a Dynamic Perspective of Person-Environment Fit." *Osaka Keidai Ronshu* 55: 177-190.

————. 2007. "A Contingency Perspective of the Importance of PJ Fit and PO Fit in Employee Selection." *Journal of Managerial Psychology* 22: 118-131.

Tabachnick, B. G. and L. S. Fidell. 2006. *Using Multivariate Statistics* (4th Ed). Harper Collins, New York.

Talbot, D. and J. Billsberry. 2007. "Employee Fit and Misfit: Two Ends of the Same Spectrum?" Paper presented at the 1st Global e-Conference on Fit (paper available upon request).

Turban, D. B. and T. L. Keon. 1993. "Organizational Attractiveness: An Interactionalist Perspective." *Journal of Applied Psychology* 78: 184-193.

Vancouver, J. B. and N. W. Schmitt. 1991. "An Exploratory Examination of Person-Organization Fit: Organizational Goal Congruence." *Personnel Psychology* 44: 333-352.

Van Vianen, A. E. M. and J. W. Stoelhorst. 2007. "Homogeneity of Personalities Generating Organizational Culture: Bottom-Up Rather Than Top-Down Fit." Keynote paper presented at the 1st Global e-Conference on Fit (paper available upon request).

Verquer, M. L., T. A. Beehr, and S. H. Wagner. 2003. "A Meta-Analysis of Relations between Person-Organization Fit and Work Attitudes." *Journal of Vocational Behavior* 63: 473-489.

Williams, L. J., J. A. Cote, and M. R. Buckley. 1989. "Lack of Method Variance in Self-Reported Affect and Perceptions at Work: Reality or Artifact?" *Journal of Applied Psychology* 74: 462-468.

JOURNAL OF MANAGERIAL ISSUES
Vol. XXXII Number 1 Spring 2020

The Relationship between Accounting and Market Measures of Firm Financial Performance: How Strong Is It?

Richard J. Gentry, Ph. D.
Assistant Professor
University of Mississippi

Wei Shen, Ph. D.
Associate Professor
Arizona State University

The construct of firm performance is of central importance to management research because explaining variation in performance is an enduring theme in the study of organizations (e.g., Hoopes *et al.*, 2003). Although firm performance has been recently proposed as a multidimensional construct that consists of many different aspects such as operational effectiveness, corporate reputation, and organizational survival (Richard *et al.*, 2009), one of the most extensively studied areas is its financial component, the fulfillment of the economic goals of the firm (Barney, 2002; Venkatraman and Ramanujam, 1986). To assess the financial aspect of firm performance (i.e., financial performance), organizational researchers generally use either accounting-based measures of profitability such as return on assets (ROA), return on sales (ROS), and return on equity (ROE), or stock market-based measures such as Tobin's Q and market return (Combs *et al.,* 2005; Hoskisson *et al.*, 1999; Hult *et al.*, 2008).

Although both accounting-based and market-based measures are widely accepted as valid indicators of firm financial performance, there is an ongoing debate about their relationship in management research, especially regarding how closely they are related (Chakravarthy, 1986; Combs *et al.*, 2005; Keats, 1988; Murphy *et al.*, 1996; Richard *et al.*, 2009; Rowe and Morrow, 1999). Theoretically, researchers generally conceptualize accounting measures as reflections of past or short-term financial performance, and market measures as reflections of future or long-term financial performance (Hoskisson *et al.*, 1994; Keats and Hitt, 1988). However, there is no consensus about the relationship between past/short-term performance and future/long-term performance. In an oft-cited article that conceptualizes both accounting and market measures as indicators of

the financial aspect of firm performance, Venkatraman and Ramanujam (1986) suggest that these measures can be unrelated because of the conflicts between achieving short-term and long-term economic goals. Among those who expect accounting and market measures to be related, there is a debate about whether their relationship is sufficiently high so that they can be treated as equivalent, interchangeable measures of firm financial performance (Combs *et al.*, 2005; Richard *et al*., 2009).

Empirical findings are mixed about the relationship between accounting and market measures of financial performance. While some studies report a positive relationship (Hoskisson *et al.*, 1994; McGuire and Matta, 2003), others report a negative relationship (Keats and Hitt, 1988; Nelson, 2003), or no relationship at all (Chakravarthy, 1986; Hillman, 2005). In the few studies using factor analysis and structural equation methods, the findings are also mixed. Rowe and Morrow (1999) report that the first-order factors of accounting profitability and market performance are significantly correlated with each other and load significantly on a second-order factor. In contrast, Keats (1988) and Combs *et al.* (2005) find the empirical overlap between accounting profitability and market performance to be relatively small and that they do not converge into a higher order factor.

This ongoing debate about the relationship between accounting and market measures has important implications for organizational research because it concerns whether firm financial performance can be treated as a single unidimensional construct (Combs *et al.*, 2005; Keats, 1988; Richard *et al.*, 2009; Rowe and Morrow, 1999).[1] If accounting and market measures are highly correlated, that is, they demonstrate sufficient convergent validity (Nunnally and Berstein, 1996; Schwab, 1999), it suggests that these measures can be treated as equivalent, interchangeable indicators of firm financial performance, a necessary condition to be considered a single unidimensional construct. In this situation, theories of firm financial performance that find support in accounting measures should also find support in market measures, and vice versa. Researchers can also increase measurement reliability by using both of them to create a composite measure of firm financial performance (Rowe and Morrow, 1999; Schwab, 1999). On the other hand, if accounting and market measures are not correlated or are correlated only at a low level, it suggests that firm financial performance is not a single unidimensional construct and that accounting and market measures capture its distinct dimensions. In this situation, researchers should attend to the differences between accounting profitability and market performance, and develop separate theories to explain their variation.

When findings about the relationship between two variables are mixed, scholars often resort to meta-analysis to detect their relationship at the population level (Hunter and Schmidt, 1990). Meta-analysis is a statistical technique that generates an estimate of the relationship between two variables by aggregating empirical results across individual studies. It is widely used in micro-organizational research (Schmidt, 2008) and has been increasingly used in strategy research (Combs *et al.*, 2005; Dalton and Dalton, 2008).

Although meta-analysis can correct for various statistical artifacts resulting from the samples used in individual studies, its reliance on the results reported in these studies has some important limitations. First, these studies may not all report the information needed. Second, because there is a risk that a study may not survive the review process if it reports no support for the theory under investigation with either accounting or market measures of firm financial performance, an estimate derived from a meta-analysis of published studies suffers from a selection bias (Orwin and Cordray, 1985). Lastly, estimates derived from a meta-analysis of previous studies can be either distorted by effects obtained from multiple publications using the same dataset (Wood, 2008) or

biased toward effects in over-sampled companies, such as the *S&P* 500 or *Fortune 500* firms.

To contribute to the debate concerning appropriate performance measurement, this paper presents a more comprehensive analysis of the relationship between accounting profitability and market performance and asks the question whether or not accounting and market measures of performance are highly correlated enough at either the individual industry or the population level to be used as interchangeable indicators of performance. Accordingly, this paper also investigates whether or not certain industries show a stronger relationship between these measures than others. Instead of conducting a meta-analysis using existing studies, this study employs data from all the publically traded firms in the COMPUSTAT database from 1961 to 2008 to examine the relationship of market-based and accounting measures both across-industry and within each industry at the two-digit and the four-digit standard industry code (SIC) level.

In the cross-industry analysis, the results indicate that, although measures of accounting profitability and market performance are positively correlated, their covariance is less than 10% and thus provides no evidence of convergence (Kline, 1998). The findings also suggest that measures of accounting profitability and market performance do not load on a higher-order factor. On the basis of these findings, the results indicate that accounting profitability and market performance represent distinct dimensions of firm financial performance. Because of the centrality of firm financial performance in organizational research and the extensive use of accounting profitability and market performance measures as its indicators, this study concludes with several recommendations for future research on the basis of these findings.

LITERATURE REVIEW

Financial performance, which assesses the fulfillment of the firm's economic goals, has long been a central focus in management research on firm performance (Barney, 2002; Combs *et al.*, 2005; Hult *et al.*, 2008; Richard *et al*., 2009). Because of the influence of industrial organization economics (Porter, 1981), researchers in the early years primarily used accounting-based profitability ratios, such as ROA, ROE, and ROS, as measures of financial performance (Hoskisson *et al.*, 1999). Starting in the mid-1980s, finance theories and market-based performance measures were introduced into management research (e.g., Bromiley, 1990; Lubatkin and Shrieves, 1986). With the rise of shareholder activism during the late 1980s and the early 1990s, many corporations started to adopt shareholder value maximization as their stated objective and use it in executive compensation (Useem, 1993). This change promoted the adoption of market-based performance measures in management research, and the use of market-based performance measures has been increasing since the early 1990s (Hoskisson *et al.*, 1999).

Debate about the Relative Strengths of Accounting and Market Measures

The use of accounting and market measures as indicators of firm financial performance has been the subject of numerous debates over the past two decades (Chakravarthy, 1986; Combs *et al.*, 2005; Johnson *et al.*, 1985; Keats, 1988; Lubatkin and Shrieves, 1986; Richard *et al*., 2009). In the beginning, researchers focused on the relative strengths and weaknesses of each type of measure. When finance theories and market measures were first introduced into management research, some scholars cautioned about their use by calling attention to the underlying assumption of stock

market efficiency. For example, Bromiley (1990) points out that finance theories are generally developed on the assumption of market efficiency, which views stock price as representing the firm's fundamental value (i.e., the present value of expected future dividends). Because the assumption of market efficiency has been questioned by some eminent finance scholars (e.g., Tobin, 1984), Bromiley (1990) cautions management researchers to be extremely careful in their use and interpretation of market performance data. Even if the assumption of market efficiency holds, Bettis (1983) argues that a firm's stock price does not necessarily reflect its fundamental value because it is influenced by the information managers choose to disclose to investors.

To justify and promote the use of market-based performance measures, its proponents emphasize their advantages over accounting measures. For example, Lubatkin and Shrieves (1986) argue that market-based performance measures incorporate all relevant information and thus, unlike accounting measures, they are not limited to a single aspect of firm performance. Some researchers even explicitly take the shareholder perspective and propose that maximization of shareholder wealth is the ultimate criterion for the fulfillment of the firm's economic goals (e.g., Johnson *et al.*, 1985). In addition, accounting measures have been criticized for being subject to managerial manipulation and distortions due to depreciation policies, inventory valuation and treatment of certain revenue and expenditure items, differences in methods of consolidating accounts, and outright lying and fraud (Chakravarthy, 1986).

Recognizing that neither accounting nor market measures are perfect, many management researchers accept them both as valid measures of firm financial performance (Hoskisson *et al.*, 1999). The focus of the critiques and debates subsequently shifts to the relationship between them and the implications for the conception of firm financial performance (e.g., Combs *et al.*, 2005; Keats, 1988; Murphy *et al.*, 1996; Rowe and Morrow, 1999). Conceptually, researchers generally treat accounting profitability as measures of past or short-term financial performance and market performance as measures of future or long-term performance (Hoskisson *et al.*, 1994; Keats, 1988). However, there are opposing views about their empirical relationship and whether they are equivalent measures or capture distinct dimensions of firm financial performance.

Debate about the Convergent Validity between Accounting and Market Measures

Although a few researchers (e.g., Chakravarthy, 1986) suggest that accounting and market measures are unrelated because of the conflicts between achieving short-term and long-term economic goals, many researchers expect them to be correlated, either positively or negatively. Some suggest a positive relationship on the basis of the relative stability of firm financial performance and because past performance is a good predictor of future performance (e.g., Hoskisson *et al.*, 1994; Jacobsen, 1988). Others imply a negative relationship by suggesting that investors do not expect either high performance or low performance to last long (e.g., Keats and Hitt, 1988). Specifically, because investors expect that high performance will decrease in the future and low performance tends to bounce back, Keats and Hitt (1988) suggest that market measures, because they are expectations of future performance, are negatively related to accounting measures.

Among those who expect accounting and market measures to be correlated, there is an ongoing debate about whether their relationship is sufficient so that researchers can treat them as equivalent measures of a single, unidimensional construct of firm financial performance. Keats (1988) proposes that because accounting measures reflect historical, operation-oriented information and market measures reflect anticipatory, market-

oriented information, they represent two possible dimensions of financial performance that are related, yet distinct. In a structural equation analysis using data from 110 *Fortune 500* companies, Keats (1988) finds that measures of accounting profitability load on one factor and measures of market performance load on another factor. Moreover, she finds that although the standardized path coefficient relating accounting profitability to market performance is statistically significant (ξ = -0.23), these two factors do not converge in a single factor model. On the basis of these results, Keats (1988) concludes that accounting profitability and market performance do not demonstrate sufficient convergent validity and thus reflect distinct dimensions of firm financial performance.

Combs *et al.* (2005) also propose that accounting returns and market measures represent two distinct dimensions of firm performance. In their meta-analysis of prior studies published in the *SMJ*, these authors find that accounting returns are highly correlated with each other ($r >= 0.6$), but only moderately correlated with measures of market performance ($r \sim = 0.3$). Moreover, in their confirmatory factor analysis, Combs *et al.* (2005) find further support that accounting returns and market returns reflect two distinct dimensions of firm financial performance.

In contrast, Rowe and Morrow (1999) propose that although accounting and market measures are distinct, they may be heavily dominated by a higher order factor that can be described as a single underlying construct of firm financial performance. Using data from a sample of large companies ranked in the *Fortune* reputation survey from 1982 to 1992, these authors find evidence that accounting and market performance load significantly on a single second-order factor. They thus conclude that the construct of firm financial performance "has a higher order structure" and accounting and market measures "are distinct yet similar" in that they both provide insights into this higher order factor.

The debate about the relationship between accounting and market measures has important implications for the conception and measurement of firm financial performance (Combs *et al.*, 2005; Keats, 1988; Rowe and Morrow, 1999). If accounting and market measures are correlated at a high level (e.g., $|r| > 0.50$, Cohen and Cohen, 1983), it suggests that these measures can be treated as equivalent indicators of a unidimensional construct of financial performance. Because of their respective limitations (Bromiley, 1990; Chakravarthy, 1986; Lubatkin and Shrieves, 1986), researchers can use them both to create a composite measure to better assess firm financial performance (Rowe and Morrow, 1999; Schwab, 1999). Showing that the two measures correlate with one another would suggest that the measures can be used interchangeably in studies and help connect strategy's use of the term "performance" with other fields, such as accounting and economics. If accounting and market measures *are not* correlated or are correlated only at a relatively low level (e.g., $|r| < 0.30$, Cohen and Cohen, 1983), firm financial performance may not be a single construct of which accounting and market measures capture distinct dimensions. Instead, studies can only address one type of performance with each measure and the term "performance" in strategy research will need to be more carefully considered (Combs *et al.*, 2005; Keats, 1988). Researchers will need to attend to the differences between accounting profitability and market performance and develop separate theories to explain their respective variation.

METHODS

The sample includes all publicly traded firms listed in the U.S. that conform to the U.S. Generally Accepted Accounting Principles (GAAP), excluding foreign firms that were listed through American Depositary Receipt (ADR). Data were obtained from the COMPUSTAT database over a 48-year period from 1961 to 2008. The initial sample excluded observations with missing information on assets, sales, net income, and stock market performance information. The sample was also trimmed at the 5th and 95th percentile of each performance variable due to extensive outliers. Although this treatment reduces the sample size, it is necessary to minimize the influence of outliers on the results. The final sample consists of 11,809 firms and 122,709 firm-year observations with complete information for at least two years.

Measures

Accounting profitability was measured with four of the most extensively used measures of accounting profitability for each firm-year: ROA, ROE, ROS, and ROI (Combs *et al.*, 2005). ROA was calculated as net income divided by total assets plus depreciation, ROE as net income divided by common equity, ROS as net income divided by total sales, and ROI as net income divided by total invested capital. Following the definitions outlined in the COMPUSTAT manuals, all ratios used net income before extraordinary items in the calculations.

Stock market performance was measured using market-to-book value ratio (MTB) and market return, both are most widely used measures of stock market performance in management research. According to Combs *et al.*'s (2005) survey, they each accounted for 38% of the times when market measures were used as indicators of firm financial performance in the articles published in the *SMJ* from 1980 to 2004. These measures were used in separate analysis and obtained essentially the same results. For the purpose of parsimony, only the results employing MTB as the market measure are reported. Additionally, prior research suggests that MTB might be the measure most likely to show high correlations with measures of accounting performance (Richard *et al.*, 2009). MTB was calculated as the ratio of the firm's total market value divided by its total asset value.

Statistical Analysis

This study took two approaches to investigate the relationship between accounting profitability and market performance across industries for the entire sample. The first approach focuses on their correlation coefficients. A correlation coefficient reveals the direction and the covariance between two variables. Although correlations are inadequate in testing causal relationships because they lack statistical control for moderators, in examining the convergence between measures of the same construct, correlation coefficients are often used as an important indicator (Kline, 1998). Because market performance is assumed to reflect future performance (Hoskisson *et al.*, 1994), this study presents not only MTB's correlations with measures of accounting profitability during the same fiscal year, but also its correlations with measures of accounting profitability during the following fiscal year.

In the second approach, this study presents firm fixed-effects regression analyses with a set of fiscal year dummy variables to control for any potential influence of time on the relationship between accounting profitability and market performance.[2] Because

market performance is often assumed to incorporate all relevant information and reflect future performance (Lubatkin and Shrieves, 1986), it should be able to predict future accounting profitability. Moreover, because information about accounting profitability is not available until the firm releases it after the end of the fiscal year, market performance at the end of the fiscal year should also be indicative of accounting profitability of the same fiscal year. Finance research actually shows that equity market variables lead accounting variables (Fama, 1981). Thus, MTB at time t was used as the independent variable and each measure of accounting profitability at t and $t+1$ as the dependent variable in the initial regression analysis.

These data violated some basic requirements of OLS regression. Wooldridge's test (Wooldridge, 2002) suggested that the panel data have an autocorrelated structure ($F = 3{,}228.72$, $p < 0.001$). Further analysis using Greene's modified Wald-test (Greene, 2000) also indicates variance differences across panels, a condition known as groupwise heteroskedasticity ($\chi^2 = 4.8\text{x}10^6$, $p < 0.001$).

Two techniques were employed to handle these violations. First, autocorrelation was addressed by including a one-year lag of the dependent variable, a common correction for first-order autocorrelations (Greene, 2000). A separate Arellano-Bond test of average autocovariance shows no evidence that these data suffer from second-order or higher order autocorrelations ($Z = 1.32$, *n.s.*). To adjust for heteroskedaticity, robust standard errors were employed in the regression models (Greene, 2000). Additionally, half of the analysis was within industry, so each industry would have its own variance estimate and a separate regression. Thus, both violations of OLS assumptions are addressed using two techniques.

To examine whether there are certain industries in which the relationship between accounting profitability and market performance is strong enough that they can be treated as equivalent, interchangeable indicators of firm financial performance, firms were separated into individual industries using the SIC code at both the coarse two-digit designation and the more tightly defined four-digit level. Firm fixed-effects regression analyses were conducted for each subsample (industry) and the summary results of each individual regression tabulated to summarize the relationship for the four measures of accounting profitability and MTB.

RESULTS

Table I reports the means, standard deviations, and correlation coefficients for the entire sample. The results show that, although the correlations between MTB and all the measures of accounting profitability are statistically significant, they are rather small when considered in the context of convergent validity. The highest correlation is between MTB_t and ROA_t, which is 0.18, indicating a covariance of only 3%. To be considered as evidence of convergence between measures of the same construct, their covariance should be significantly different from zero and sufficiently large (Campbell and Fiske, 1959). Although what is considered to be sufficiently large is subjective, Kline (1998) suggests that a covariance of less than 10%, which means a correlation of less than 0.30, should not be considered as evidence of convergence. Using this criterion, results in Table I show no evidence of convergence between MTB and the measures of accounting profitability across industries. In contrast, the correlations between the four measures of accounting profitability during the same year are all above 0.65 (i.e., a covariance of at least 42%), indicating strong evidence of convergent validity between these measures (Kline, 1998).

Table I
Descriptive Statistics and Correlations of Variables for All the Sampled Firms, 1961-2008[A]

	Variables	Mean	S.D.	1	2	3	4	5	6	7	8
1	MTB_t	0.81	0.74								
2	ROA_t	3.11	7.02	0.18							
3	ROE_t	7.02	15.29	0.08	0.86						
4	ROI_t	5.19	10.98	0.13	0.94	0.91					
5	ROS_t	3.28	11.59	-0.03	0.71	0.66	0.68				
6	ROA_{t+1}	2.74	7.47	0.13	0.55	0.44	0.50	0.41			
7	ROE_{t+1}	5.92	17.16	0.06	0.44	0.47	0.46	0.37	0.85		
8	ROI_{t+1}	4.51	11.91	0.09	0.51	0.46	0.52	0.40	0.94	0.91	
9	ROS_{t+1}	2.87	12.05	-0.04	0.40	0.36	0.39	0.59	0.72	0.66	0.69

Pooled cross-sectional, time-series data. N = 122,709.
[a]All correlations are significant at $P < 0.05$

Table II
Firm Fixed-Effects Regression Analyses of
Different Measures of Accounting Profitability on MTB for the Entire Sample[A]

	ROA_t	ROE_t	ROI_t	ROS_t	ROA_{t+1}	ROE_{t+1}	ROI_{t+1}	ROS_{t+1}
MTB_t	3.32**	6.08**	4.90**	2.85**	1.75**	3.51**	2.77**	1.63**
	(0.06)	(0.10)	(0.09)	(0.09)	(0.04)	(0.10)	(0.06)	(0.06)
Lagged	0.21**	0.18**	0.20**	0.20**	0.23**	0.22**	0.22**	0.24**
DV	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
F	237.47**	141.70**	320.04**	118.29**	296.25**	209.58**	259.27**	208.43**
R^2	0.25	0.15	0.19	0.22	0.26	0.18	0.21	0.29
ΔR^2	0.06	0.04	0.06	0.03	0.02	0.01	0.02	0.01

**$p < 0.001$
[a]Year dummy variables are included in the analyses, but their coefficients are not reported. Robust standard errors are in the parenthesis.

Table II reports the results of firm fixed-effects regression analyses for the entire sample, with MTB as the independent variable and accounting profitability as the dependent variable. Year effects are not reported to save space. The results show the coefficients for MTB are positive and statistically significant in all models ($p < 0.001$), indicating that MTB has a positive relationship with accounting profitability of both the same year and the following year. Turning to the effect size, the covariance between MTB and measures of accounting profitability, after controlling for autocorrelations and time effects, is indicated by the changes in the R^2, which are in the range of 0.01 to 0.07. The highest is between MTB_t and ROA_t, which is 0.07. Although it is larger than the 4% covariance suggested by the correlation reported in Table I, it is still below the commonly accepted 10% threshold and thus should not be considered as evidence of convergence (Kline, 1998). Therefore, the regression results are consistent with the correlation analysis, showing no evidence of convergence between the four most extensively used measures of accounting profitability (ROA, ROE, ROI, and ROS) and one of the most extensively used measures of market performance (MTB).

Table III
Distributions of Significant Within-Industry Correlations between MTB and Different Measures of Accounting Profitability

A. Among the 72 Industries at the Two-Digit SIC Level

	[-1, -0.5)	[-0.5, -0.3)	[-0.3, 0)	[0, 0.3]	(0.3, 0.5]	(0.5, 1]	Total
ROA_t	0	0	1	21	29	11	62
ROE_t	0	0	1	35	15	2	53
ROI_t	0	0	0	22	26	6	54
ROS_t	0	0	3	27	23	4	57
ROA_{t+1}	0	0	2	28	24	6	60
ROE_{t+1}	0	0	3	43	6	2	54
ROI_{t+1}	0	0	2	32	18	4	56
ROS_{t+1}	0	0	4	27	20	2	53

B. Among the 440 Industries at the Four-Digit SIC Level

	[-1, -0.5)	[-0.5, -0.3)	[-0.3, 0)	[0, 0.3]	(0.3, 0.5]	(0.5, 0.1]	Total
ROA_t	1	2	6	77	155	94	335
ROE_t	2	0	10	116	129	28	285
ROI_t	1	3	6	88	158	58	314
ROS_t	2	4	11	80	140	71	308
ROA_{t+1}	2	1	6	95	144	51	299
ROE_{t+1}	1	1	12	144	69	18	245
ROI_{t+1}	1	2	9	112	127	30	281
ROS_{t+1}	3	6	9	78	127	47	270

Table III reports the distribution of within-industry correlations between MTB and the measures of accounting profitability at both the two-digit SIC level and the four-digit SIC level. Because the correlations must be significantly different from zero to be considered as evidence of convergence between measures of the same construct

(Campbell and Fiske, 1959), the results include only correlations that are significant at $p < 0.05$. The correlations are presented in six categories: [-1, -0.5), [-0.5, -0.3), [-0.3, 0), [0, 0.3], (0.3, 0.5], and (0.5, 1][3]. These categories correspond to three conventionally accepted levels of correlations (e.g., Cohen and Cohen, 1983; Kline, 1998): low ($|r| <= 0.3$), moderate ($0.3 < |r| <= 0.5$), and high ($|r| > 0.5$).

Panel A of Table III reports the distribution of significant within-industry correlations among the 72 industries at the two-digit SIC level. The last column indicates the total number of industries in which the correlations between MTB_t and each of the accounting measures are statistically significant at $p < 0.05$. Overall, Panel A shows that the strength of the relationship between MTB and accounting profitability varies by industry at the two-digit SIC level. For example, among the 72 industries in total, MTB_t and ROA_t co-vary at a low level ($|r| <= 0.3$) in 22 industries, at a moderate level ($0.3 < |r| <= 0.5$) in 29 industries, and at a high level ($|r| > 0.5$) in 11 industries. The correlations between MTB_t and the other measures of accounting profitability display a similar pattern, although the numbers of industries that exhibit moderate and high correlations are smaller than those between MTB_t and ROA_t.

Panel B of Table III reports the distribution of significant within-industry correlations among the 440 industries at the four-digit SIC level. It shows a similar pattern as that in Panel A. For example, among the 440 industries in total, MTB_t and ROA_t co-vary at a low level ($|r| <= 0.3$) in 84 industries, at a moderate level ($0.3 < |r| <= 0.5$) in 157 industries, and at a high level ($|r| > 0.5$) in 95 industries. Overall, results in Table III show that there are some industries in which the covariance of accounting profitability and MTB exceeds 25%, indicating evidence of convergence.

Table IV summarizes the results of firm fixed-effects regression analyses within each industry at the two-digit (Panel A) and the four-digit SIC level (Panel B). To ensure that the covariance between MTB and measures of accounting profitability is statistically significant, the table only includes industries in which both the coefficient for MTB and the *F*-statistics for the model are significant at $p < 0.05$. Corresponding to the low, moderate, and high levels of correlation effect sizes, Table III reports the frequency distribution of the increase in R^2 at three levels: [0, 0.1], (0.1, 0.25], and (0.25, 1].

Panel A shows that the covariance between MTB and accounting measures is in the range of [0, 0.1] for most industries at the two-digit SIC level after controlling for autocorrelations and time effects. However, there are a few industries in which the covariance is in the range of (0.1, 0.25]. For example, there are 32 industries (50%) in which the covariance between MTB_t and ROA_t is in this range. Panel B shows that many industries at the four-digit SIC level have the covariance between MTB and accounting measures in the range of (0.1, 0.25]. For example, among the 440 industries at the four-digit SIC level, MTB_t and ROA_t co-vary at a low level ([0, 0.1]) in 191 industries (64%), at a moderate level ((0.1, 0.25]) in 107 industries (36%), and at a high level ((0.25, 1]) only one industry. Overall, these results provide additional evidence that the relationship between accounting profitability and market performance varies significantly by industry, but these results do not effectively suggest convergence in any particular industry regardless of the extent of aggregation. In general, the relationship was higher between the two measures in the four-digit SIC industries, probably because the similarity between the firms reduces investor confusion and extraneous variance.

The highest variance explained across all measures were in four relatively unrelated Table IV industries: cutlery manufacturing (19.2%), water transportation (18.7%), paint and varnish manufacturing (18.7%), and miscellaneous communication services (18.1%). Varying between services and physical manufacturing, these industries

showed the highest significant relationship between accounting profitability and market to book ratio. The results did not suggest why these particular industries would display a higher relationship than others, but the average size of these industries does not recommend them as a more fruitful empirical setting for future research.

Table IV
Summaries of Firm Fixed-effects Regression Analyses of Accounting Profitability on MTB within Each Industry [A]

A. Among the 72 Industries at the Two-Digit SIC Level

	Average Model R^2	Average ΔR^2	[0, 0.1]	(0.1, 0.25]	(0.25, 1]	Total
ROA_t	0.29	0.10	31	32	1	64
ROE_t	0.24	0.05	55	7	0	62
ROI_t	0.28	0.07	39	24	0	63
ROS_t	0.25	0.05	41	15	0	56
ROA_{t+1}	0.25	0.06	53	9	0	62
ROE_{t+1}	0.19	0.03	56	1	0	57
ROI_{t+1}	0.22	0.06	53	8	0	61
ROS_{t+1}	0.21	0.05	51	4	0	55

B. Among the 440 Industries at the Four-Digit SIC Level

	Average Model R^2	Average ΔR^2	[0, 0.1]	(0.1, 0.25]	(0.25, 1]	Total
ROA_t	0.46	0.08	191	107	1	299
ROE_t	0.42	0.05	262	33	0	295
ROI_t	0.45	0.07	219	88	1	308
ROS_t	0.49	0.04	225	51	0	276
ROA_{t+1}	0.42	0.05	257	30	0	287
ROE_{t+1}	0.40	0.03	251	10	0	261
ROI_{t+1}	0.42	0.04	255	31	1	287
ROS_{t+1}	0.40	0.04	242	21	0	263

[a]Results reflect results for only those industries where the inclusion of accounting performance explained significant variance in the market to book ratio. Although the sample covered 72 and 440 industries respectively, the tables exclude models where the variance explained was statistically insignificant.

Additional Analysis

To verify the robustness of the findings, several additional analyses were conducted. First, it is important to establish that the relationship does not change if a longer time period of accounting returns is used instead of single-year results. Analysis measuring accounting profitability and MTB using a three-year (*t-1*, *t*, *t+1*) moving average show

that the cross-industry correlations obtained from the moving averages are a little higher than those obtained from the annual data, and the highest is 0.24 between the three-year moving average ROA and MTB (indicating a covariance of 6%). For within industry analysis, results show that the correlations of the three-year moving average measures vary by industry, in a pattern similar to the effect sizes of the annual data.

Second, it is important to establish whether accounting profitability and market performance load on a higher-order factor. To examine this possibility, a confirmatory factor analysis (CFA) was conducted. The construct validation literature suggests that the underlying factor should account for at least 50% of variance in the measures (i.e., with a factor loading above 0.70) to indicate that the measures co-vary at an adequate level (Fornell and Larcker, 1981; Nunnally and Bernstein, 1996). The first-order factor model shows that the four measures of accounting profitability – ROA, ROE, ROI, and ROS – load onto one single factor (eigenvalue = 3.22, and their factor loadings are 0.96, 0.91, 0.96, and 0.73 respectively). The second-order factor model shows that the eigenvalue for the first factor is only 0.19, and the factor loading is merely 0.31 for both accounting profitability and MTB. This finding suggests that MTB and measures of accounting profitability do not converge onto a single second-order factor across industries, supporting the argument that they reflect distinct dimensions of firm financial performance (Combs *et al.*, 2005; Keats, 1988).

Lastly, because it may be more difficult for investors to predict firm performance in fast growing or fast declining industries, analysis was conducted examining whether the relationship between accounting profitability and MTB is influenced by industry growth rate. On the basis of industry growth rate, industries were classified into five categories: very low (below 10^{th} percentile), low (below 25^{th} percentile), moderate (between 25^{th} to 75^{th} percentile), high (above 75^{th} percentile), and very high (above 90^{th} percentile). The results show no evidence of convergence between accounting profitability and MTB in any category.

DISCUSSION AND CONCLUSIONS

This study addresses an ongoing debate about the relationship between accounting and market measures of firm financial performance in the management literature, namely, whether their relationship is sufficiently high so that researchers can treat them as equivalent indicators of a single dimensional construct of firm financial performance (e.g., Chakravarthy, 1986; Combs *et al.*, 2005; Keats, 1988; Murphy *et al.*, 1996; Rowe and Morrow, 1999; Venkatraman and Ramanujam, 1986). Using annual financial data from all the publicly traded firms in COMPUSTAT from 1961 to 2008, this study finds that although measures of accounting profitability and market performance are positively correlated across industries, their covariance is less than 10% and provides no evidence of convergence (Kline, 1998). Moreover, the results suggest that across industries accounting profitability and market performance do not load on a higher-order factor. Because of the centrality of firm financial performance in organizational research and the extensive use of accounting profitability and market performance measures as its indicators, the findings have some important implications for future research.

First, this study has direct implications for cross-industry studies that use both accounting profitability and market performance as measures of firm financial performance. Prior research in strategic management has been criticized for using single indicators to measure key constructs such as firm financial performance (Boyd *et al.*,

2005). To improve the quality of construct measurement, an increasing number of strategic management researchers have started to use multiple indicators to measure key constructs and use structural equation modeling techniques in the analysis (Shook *et al.*, 2004). In this approach, researchers generally treat the indicators as equivalent reflections of the underlying construct and use factor analysis techniques to derive a composite estimate of the construct that accounts for the covariance of the individual measures (Podsakoff *et al.*, 2006). This paper's findings suggest that it is inappropriate to combine accounting and market measures into a single financial performance measure. Because the covariance of accounting profitability and market performance is less than 10% across industries, a composite estimate of financial performance derived from factor analysis leaves out a large amount of variance that is unique to each measure as measurement error. When the composite estimate is the dependent variable, researchers will not be able to detect factors that affect the unique variance of accounting profitability or market performance because the unique variance is dropped from analysis as measurement error.

This study provides clear evidence showing that firm financial performance is not a single unidimensional construct and that accounting profitability and market performance represent distinct dimensions that have little empirical overlap. Therefore, this study suggests that it will be difficult for organizational researchers to develop general theories of firm financial performance that can effectively explain variation in both accounting profitability and market performance. Researchers should focus on creating distinct theories of each and explaining why their variation is so unrelated. The value of a firm on the stock market is a reflection of its future value while the accounting profits of a firm are a reflection of its past performance. The two have the potential to be related, but the logic and philosophy they represent are different and cannot be assumed to overlap.

Second, this study has implications for studies that use only accounting profitability or market performance as measures of firm financial performance. Currently, many authors discuss firm performance very generally in their theory and hypothesis development and elaborate on their performance measures only in the method section. Building on the arguments presented in this paper, researchers should consider clearly defining the construct or the specific aspect of firm financial performance they intend to study first, and then using it to guide theory and hypothesis development.

For example, when investigating market performance, researchers should be clear from the beginning, carefully conceptualize what market performance represents, and then use this conception consistently in theory and hypothesis development. Because market performance does not reflect the firm's fundamental value, but investors' perceptions of it (Thaler, 2004), researchers interested in market performance should focus on how firm strategies and actions influence investors' perceptions.

Similarly, when investigating variance in profitability, researchers should carefully conceptualize what profitability reflects first and then use this conception to guide theory and hypothesis development. If accounting profitability is assumed to reflect operational efficiency and effectiveness, researchers should focus on how firm actions influence operational efficiency or effectiveness to understand the variation in firm profitability and use techniques developed to check and adjust for earnings manipulation (e.g., Dechow *et al.*, 1995).

In addition to the above general recommendations, this study also raises some important questions for future research. Market and accounting based performance measures continue to maintain a central place in not only the academic but also the

practitioner view of firm performance. Future research into the connection between these two should examine the potential for mediation. Richard *et al.* (2009) suggest the importance of stakeholders to the firm, following in the tradition of important work into the behavioral theory of the firm (Cyert and March, 1963). A mediated model of the relationship between accounting and market performance should consider the role of equity analysts pushing the market and in turn being influenced by top management team influence behaviors. Analysts and managers interact in practice (Puffer and Weintrop, 1991), but this relationship is left out of current investigations.

Another direction for future research is to investigate how firms and their managers cope with the divergence between accounting profitability and market performance. For example, because of the increasing influence of investor activism (Useem, 1993), these firms might use more long-term incentive plans such as stock ownership and stock options to give investors an impression that managerial interests are well aligned with theirs (Westphal and Zajac, 1994).

Importantly, because the sample consists of only firms in the COMPUSTAT database, the findings are only applicable to the U.S. context. Research in finance and accounting has examined the relationship between accounting and market returns in non-U.S. contexts, such as the United Kingdom (O'Hanlon, 1991) and the emerging market of Czech Republic (Jindrichovska, 2001). Although the focus of this research is on stock market efficiency, that is, whether stock prices predict accounting returns or whether the release of information about accounting returns affects stock prices, it appears important to examine the convergence of accounting and market returns in non-U.S. contexts, particularly in emerging economies where legal protection of minority shareholder interests tend to be weak (La Porta *et al.*, 1998).

Lastly, this study does not suggest that organizational researchers focus solely on accounting profitability or market performance in the study of firm performance. Accounting profitability and market performance only reflect the financial aspect of firm performance. There are many other aspects of firm performance such as growth, operational effectiveness, corporate reputation, customer knowledge, business processes, and social performance (Bromiley, 1990; Combs *et al.*, 2005; Venkatraman and Ramanujam, 1986), which all deserve investigation and all may be variables of interest in furthering organizational objectives beyond profits and stock returns. Instead, researchers should always clearly define which aspect of firm performance they intend to study first, and then develop and test theories and hypotheses about that specific aspect of firm performance, a construct that was originally referred to as "organizational effectiveness." An accumulation of knowledge from these studies will not only enhance the understanding of each individual aspect of firm performance, but also the relationships between them and the overall construct of firm performance. Indeed, acknowledging that "performance" means very different things to different constituencies within the organization is one of the largest oversights in management research today (Richard *et al.*, 2009).

Notes

1. In the finance and accounting literature, there is also a stream of studies about the relationship between accounting measures and stock returns in both U.S. and international markets (e.g., Fama, 1981; Jindrichovska, 2001; O'Hanlon, 1991).

This research focuses on stock market efficiency, specifically, whether the release of information about accounting returns affects stock prices or whether stock prices predict accounting returns. Methodologically, it primarily examines whether the relationship between accounting and market measures is *statistically significant*. In contrast, the debate in the management literature focuses on whether the relationship between accounting and market measures is *sufficiently high* to treat firm financial performance as a single unidimensional construct and to treat accounting and market measures as its equivalent indicators.

2. Compared with fixed-effects models, random-effects models require the firm-specific error term (random effect) to be independent of the independent variables (Wooldridge, 2002). When this requirement is not satisfied, random-effects models generate inconsistent estimates. In comparing the consistent fixed-effects model with the efficient random-effects model, the Hausman specification test suggests that the efficient random-effects model is inconsistent ($\chi^2 = 859.31$, $p < 0.01$).
3. To specify an interval, the paper uses parentheses to indicate an exclusive close to the interval while brackets to indicate an inclusive one. For example, (0.3, 0.5] indicates $0.3 < r <= 0.5$.

References

Barney, J. 2002. *Gaining and Sustaining Competitive Advantage* (2nd Ed.). Upper Saddle River, NJ: Prentice Hall.

Bettis, R. 1983. "Modern Financial Theory, Corporate-Strategy and Public-Policy – 3 Conundrums." *Academy of Management Review* 8: 406-415.

Boyd, B., S. Gove, and M. Hitt. 2005. "Construct Measurement in Strategic Management Research: Illusion or Reality?" *Strategic Management Journal* 26: 239-257.

Bromiley, P. 1990. "On the Use of Finance Theory in Strategic Management." *Advances in Strategic Management* 6: 71-98.

Campbell, D. and D. Fiske. 1959. "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix." *Psychological Bulletin* 56: 81-105.

Chakravarthy, B. 1986. "Measuring Strategic Performance." *Strategic Management Journal* 7: 437-458.

Cohen, J. and P. Cohen. 1983. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Combs, J., T. Crook, and C. Shook. 2005. "The Dimensionality of Organizational Performance and its Implications for Strategic Management Research." Chapter in *Research Methodology in Strategy and Management.* Eds. 2. D. J. Ketchen and D. D. Bergh. pp. 259-286.

Cyert, R. and J. March. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.

Dalton, D. and C. Dalton. 2008. "Meta-Analyses: Some Very Good Steps toward a Bit Longer Journey." *Organizational Research Methods* 11: 127-147.

Dechow, P., R. Sloan, and A. Sweeney. 1995. "Detecting Earnings Management." *Accounting Review* 70: 193-225.

Fama, E. 1981. "Stock Returns, Real Activity, Inflation and Money." *American Economic Review* 545-565.

Fornell, C. and D. Larcker. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research* 18: 39-50.

Greene, W. 2000. *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall.

Hillman, A. 2005. "Politicians on The Board of Directors: Do Connections Affect The Bottom Line?" *Journal of Management* 31: 464-481.

Hoopes, D., T. Madsen, and G. Walker. 2003. "Why is There A Resource-Based View? Toward a Theory of Competitive Heterogeneity." *Strategic Management Journal* 24: 889-902.

Hoskisson, R., R. Johnson, and D. Moesel. 1994. "Corporate Divestiture Intensity in Restructuring Firms – Effects of Governance, Strategy, and Performance." *Academy of Management Journal* 37: 1207-1251.

Hoskisson, R., M. Hitt, W. Wan, and D. Yiu. 1999. "Theory and Research in Strategic Management: Swings of a Pendulum." *Journal of Management* 25: 417-456.

Hult, G., D. Ketchen, D. Griffith, B. Chabowski, M. Hamman, B. Dykes, W. Pollitte, and S. Cavusgil. 2008. "An Assessment of the Measurement of Performance in International Business Research." *Journal of International Business Studies* 39: 1064-1080.

Hunter, J. and F. Schmidt. 1990. *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*. Newbury Park, CA: Sage.

Jacobsen, R. 1988. "The Persistence of Abnormal Returns." *Strategic Management Journal* 9: 415-430.

Jindrichovska, I. 2001. "The Relationship between Accounting Numbers and Returns: Some Empirical Evidence from the Emerging Market of the Czech Republic." *European Accounting Review* 10: 107-131.

Johnson, W., A. Natarajan, and A. Rappaport. 1985. "Shareholder Returns and Corporate Excellence." *Journal of Business Strategy* 6: 52-62.

Keats, B. 1988. "The Vertical Construct Validity of Business Economic Performance Measures." *Journal of Applied Behavioral Science* 24: 151-160.

Keats, B. and M. Hitt. 1988. "A Causal Model of Linkages among Environmental Dimensions, Macro Organizational Characteristics, and Performance." *Academy of Management Journal* 31: 570-598.

Kline, R. 1998. *Principles and Practice of Structural Equation Modeling*. New York: Guilford Press.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 1998. "Law and Finance." *Journal of Political Economy* 106: 1113-1155.

Lubatkin, M. and R. Shrieves. 1986. "Towards Reconciliation of Market Performance-Measures to Strategic Management Research." *Academy of Management Review* 11: 497-512.

McGuire, J. and E. Matta. 2003. "CEO Stock Options: The Silent Dimension of Ownership." *Academy of Management Journal* 46: 255-265.

Murphy, G., J. Trailer, and R. Hill. 1996. "Measuring Performance in Entrepreneurship Research." *Journal of Business Research* 36: 15-23.

Nelson, T. 2003. "The Persistence of Founder Influence: Management, Ownership, and Performance Effects at Initial Public Offering." *Strategic Management Journal* 24: 707-724.

Nunnally, J. and I. Bernstein. 1996. *Psychometric Theory*. New York: McGraw-Hill.

O'Hanlon, J. 1991. "The Relationship in Time between Annual Accounting Returns and Annual Stock Market Returns in the UK." *Journal of Business Finance & Accounting*

18: 305-314.
Orwin, R. and D. Cordray. 1985. "Effects of Deficient Reporting on Meta-Analysis: A Conceptual Framework and Reanalysis." *Psychological Bulletin* 97: 134-147.
Podsakoff, N., W. Shen, and P. Podsakoff. 2006. "The Role of Formative Measurement Models in Strategic Management Research: Review, Critique, and Implications for Future Research." In D. Ketchen and D. Bergh (Eds.) Chapter in *Research Methodology in Strategy and Management*. Oxford, UK: Elsevier Ltd. pp: 197-252.
Porter, M. 1981. "The Contributions of Industrial Organization to Strategic Management." *Academy of Management Review* 6: 609-620.
Puffer, S. and J. Weintrop. 1991. "Corporate Performance and CEO Turnover: The Role of Performance Expectations." *Administrative Science Quarterly* 36: 1-19.
Richard, P., T. Devinney, G. Yip, and G. Johnson. 2009. "Measurement Organizational Performance: Towards Methodological Best Practice." *Journal of Management* 35: 718-804.
Rowe, W. and J. Morrow. 1999. "A Note on The Dimensionality of The Firm Financial Performance Construct Using Accounting, Market, and Subjective Measures." *Canadian Journal of Administrative Sciences* 16: 58-70.
Schmidt, F. 2008. "Meta-Analysis: A Constantly Evolving Research Integration Tool." *Organizational Research Methods* 11: 96-113.
Schwab, D. 1999. *Research Methods for Organizational Studies*. Mahwah, NJ: Lawrence Erlbaum Associates.
Shook, C., D. Ketchen, T. M. Hult, and K. M. Kacmar. 2004. "An Assessment of the Use of Structural Equation Modeling in Strategic Management Research." *Strategic Management Journal* 25: 397-404.
Thaler, R. 2004. *Advances in Behavioral Finance*. New York: Russell Sage Foundation.
Tobin, J. 1984. "A Mean-Variance Approach to Fundamental Valuations." *Journal of Portfolio Management* 11: 26-32.
Useem, M. 1993. *Executive Defense: Shareholder Power and Corporate Reorganization*. Cambridge, MA: Harvard University Press.
Venkatraman, N. and V. Ramanujam. 1986. "Measurement of Business Performance in Strategy Research: A Comparison of Approaches." *Academy of Management Review* 11: 801-814
Westphal, J. and E. Zajac. 1994. "Substance and Symbolism in CEOs Long-Term Incentive Plans." *Administrative Science Quarterly* 39: 367-390.
Wood, J. 2008. "Methodology for Dealing with Duplicate Study Effects in a Meta-Analysis." *Organizational Research Methods* 11: 79-95.
Wooldridge, J. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

JOURNAL OF MANAGERIAL ISSUES
Vol. XXXII Number 1 Spring 2020

The Role of Affect- and Cognition-based Trust in Complex Knowledge Sharing

Sanjib Chowdhury
Assistant Professor of Management
Eastern Michigan University

Since the late eighties, the field of strategic management has seen a paradigm shift towards the resource-based view of the firm (Barney, 1986, 1991; Rumelt, 1987; Wernerfelt, 1984). At the fundamental level, the resource-based view focuses on firm differences based on resource endowment. According to this view, resource heterogeneity exists among firms. Also, the superior firm performance based on valuable and rare resources may sustain over time if firms can protect themselves from imitation and diffusion. Resources that are abstract, complex, ambiguous, and indigenous to a firm provide sustainability as they are not easily imitated or diffused (Barney, 1991).

Building on the resource-based view of the firm, scholars have suggested that complex knowledge that is tacit and dependent can be protected from imitation and diffusion (Berman *et al*., 2002; McEvily *et al*., 2000). This is because highly complex knowledge that is hard to codify and dependent on a specific context or a system of knowledge is difficult to transfer (Teece, 1977). Accordingly, valuable and rare complex knowledge can be an important source of superior performance and sustainable competitive advantage (Spender and Grant, 1996).

Valuable complex knowledge often originates in individual experiences and perceptions (Polanyi, 1966). Such individualized knowledge must be shared throughout the organization for it to become a source of competitive advantage. Hence, the process of sharing complex knowledge within an organization becomes important. Consequently, the question that begs an answer is, "what makes individuals share complex knowledge effectively with others within an organization?"

The overall contribution of this study is to address the above question. Although the underlying process in complex knowledge sharing is multifaceted, trustworthiness is suggested in the literature as a positive factor. However, organizational literature lacks an adequate empirical evidence of the influence of trust on complex knowledge sharing. This study provides a much needed empirical examination of the influence of interpersonal trust on complex knowledge sharing.

To do so, this article starts with a brief discussion of knowledge and trust from the organizational point of view. Next, hypotheses are developed proposing specific relationships between interpersonal trust and complex knowledge sharing. Then, research methodology and data analysis results are presented. Finally, the conclusion is presented with a discussion of implications and the need for future research.

KNOWLEDGE AS AN ORGANIZATIONAL RESOURCE

Prahalad and Hamel (1990) suggested that, it is often the quality of people that personifies the core competency of an organization. This is because the knowledge and capabilities of people within an organization are important indicators of organizational competitiveness (Pfeffer, 1994). Accordingly, organizational knowledge and its sharing has become a topic of great interest and produced a vast and diverse body of research (Argyris, 1999; Berman *et al*., 2002; McEvily and Chakravarthy, 2002; Nonaka and Takeuchi, 1995; Tsang, 2002). Management literature suggests that the concept of knowledge is far broader and richer than the concept of data or information. Following Davenport and Prusak (1998), organizational knowledge can be defined as a dynamic mix of experiences, expert insights, unique know-how, important values, and situational information that provide a framework for analyzing and incorporating new knowledge regarding organizational processes and various relationships with its stakeholders.

For further understanding, theorists have variously conceptualized the concept of knowledge in terms of its tacitness, complexity, and systemic nature (Garud and Nayyar, 1994). Tacit knowledge deals with the abstract and implicit versus concrete and explicit characters of knowledge. Tacit knowledge resides in the form of subjective insights, intuitions, hunches, and know-how. Much of the tacit knowledge is difficult to codify. As tacit knowledge is hard to articulate, it can only be acquired through shared experiences, values, perceptions, and mental models (Nelson and Winter, 1982).

Dependent knowledge, sometimes expressed as specific knowledge (Jensen and Meckling, 1992), deals with the dependent versus independent character of knowledge. The extent to which the knowledge is embedded in a specific context (specific organizational situation, specific individual situation) or in a broad system of knowledge determines its dependent or systemic nature. Hence, highly dependent knowledge can only be described in relation to a whole body of knowledge or to the situation in which it was created. Independent knowledge, on the other hand, can be described by itself. Therefore, diffusion of dependent knowledge is much more difficult than that of independent knowledge.

This study adopts complexity as a comprehensive dimension of knowledge by juxtaposing all the above conceptualizations (Hansen, 1999). Hansen suggested that the complexity of knowledge is a combination of the degree to which the knowledge is tacit and is dependent on a context or a system of knowledge. In other words, highly complex knowledge is hard to express in codes (words, numbers, etc.) and is dependent on specific context in which it was created or on a broad system of knowledge.

Although individual knowledge is an important organizational resource, it is the collaborative knowledge in an organization that determines its sustainable competitiveness (Hoops and Postrel, 1999). According to Prahalad and Hamel (1990), an organization's core competencies are the collective learning of the organization in terms of production, marketing, and technological knowledge that are hard to imitate

by competitors. Leif Edvinsson and associates (2004) suggest that developing an organization-wide system of knowledge-base and managing it with effective utilization and creation of new knowledge is important for innovation and performance. Hence, with an effective sharing process an organization can develop its knowledge-base and competitiveness (Andrews and Delahaye, 2000; McEvily *et al.*, 2000).

Consequently, sharing of complex knowledge becomes a challenging but essential task for developing organizational knowledge. Both tacit and dependent natures of complex knowledge make it difficult to share. Complex knowledge sharing is suggested to be a spiral process, which starts at the individual level and expands to greater organizational communities. According to Nonaka (1998), socialization and combination are two of the important processes through which an organization develops its knowledge base that starts with individual knowledge. Socialization involves exchange of knowledge between individuals by observation, imitation, and practice through intimate informal associations and during close professional collaboration. On the other hand, combination involves conversion of disconnected shared knowledge into a complex set of knowledge-base for the organization. As both processes require effective collaboration between individuals, effective sharing of complex knowledge can only be accomplished in the presence of a social fabric that comprises trust and cooperation (Rastogi, 2000). Thus, mutual trust promotes interpersonal complex knowledge sharing.

INTERPERSONAL TRUST WITHIN ORGANIZATIONS

A rich literature on trust is available in organizational research. According to the literature, one can have trust in a person, in a system or in collectivity. Interpersonal trust can be defined as a person's willingness to depend on another person's actions that involve opportunism (Williams, 2001; Zand, 1972). For instance, by sharing a brand new idea with a team member, one is willing to risk the ownership of the idea. Trusting an individual means "the probability that he [or she] will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation with him [or her]." (Gambetta, 1988: 217). Accordingly, trust is an actor's perception of the probability that an individual or a group will act in a certain way when these actions may affect the actor and when these actions are not controlled (Gambetta, 1988).

An important limitation of the research on trust is the lack of clear differentiation among factors of trust (Mayer *et al*., 1995), as they have independent influence on organizational processes. Among numerous classifications, affect-based trust and cognition-based trust appear as two generally accepted factors of trust (McAllister, 1995). For affect-based trust, emotional ties linking individuals provide the basis for trust. Alternatively, the basis of cognition-based trust is cognitive reasoning.

To illustrate the difference between these two types of trust, a brief discussion of their antecedents is important. Antecedents of affect-based trust are the level of citizenship behavior directed toward the evaluating person (individual who trusts someone) and the frequency of informal interaction between the evaluating person and the evaluated person (individual who is being trusted) (McAllister, 1995). If a person being evaluated exhibits a high level of citizenship behavior toward the evaluating person and if both of them socially interact frequently, it is highly likely that the

evaluating person would trust the person being evaluated. Affect-based trust, with frequent social interactions and citizenship behavior, would allow the evaluating person to trust the evaluated person with sensitive personal information, ideas, and knowledge. Hence, this makes the trusting individuals open to one another.

In contrast, antecedents of cognition-based trust are the extent of reliable role performance and the extent of professional credentials of the evaluated person (McAllister, 1995). If the person being evaluated exhibits reliability in performing complex roles and if he or she possesses outstanding professional credentials such as excellent educational qualification, special training, and relevant successful experience, it is also likely that the evaluating person will develop a high level of trust in the evaluated person. A high level of cognition-based trust would allow the evaluating person to trust the evaluated person and actively engage in collaborative work and seek knowledge from those he or she trusts.

With affect-based trust, individuals develop strong links of personal values and emotional ties toward each other. This improves their understanding of each other as individuals and creates emotional openness without much concern for vulnerability. The resulting social intimacy helps them develop shared values, perceptions, and mental models. On the other hand, with cognition-based trust, individuals may improve professional relationships and enhance professional collaborations.

Individuals with affect-based trust may not always develop cognition-based trust and consequently not pursue collaboration on certain professional activities. Likewise, individuals with cognition-based trust might not always develop affect-based trust and therefore not have shared values, perceptions, and mental models. For example, two managers who share similar values or mental models of an effective management-union relationship might not always work together as management representatives in negotiating with the union. This is because one of them might not be confident of the other's negotiating skills. Similarly, two managers with cognition-based trust who collaborate in negotiating with the union might not always have shared values or mental models of an effective management-union relationship.

Numerous scholars have suggested that trust is an important factor in the process of complex knowledge sharing as it promotes effective professional and social collaboration (Woods, 2001; Blau, 1964; Williams, 2001). Shared values, perceptions and mental models of social ties as well as shared experiences of professional collaborations are suggested as important for complex knowledge sharing (Berman *et al*., 2002; Nonaka, 1994; Tsai, 2002). Also, affect-based trust that promotes social ties may or may not co-exist with cognition-based trust that promotes professional collaboration. Hence, both affect-based and cognition-based trusts are separately important for complex knowledge sharing as the underlying processes of their influence are different.

Although previous empirical study found trust to be positively related to information sharing (Dyer and Chu, 2003), the influence of trust on complex knowledge sharing has not yet been empirically studied. A diverse stream of organizational research can be used to support the arguments presented in previous paragraphs to develop specific hypotheses for the current study. A summary of suggestions regarding the positive influence of trust on complex knowledge sharing from different streams of organizational research such as knowledge-management, transaction economics, organization structure, product innovation, and social network is presented in Table 1.

Table 1
Literature Linking Interpersonal Trust and Complex Knowledge Sharing

Stream of Research	Author(s), Year	Underlying Knowledge Sharing Process	Linking Trust to Complex Knowledge Sharing
Organization Knowledge Management	Berman *et al.*, 2002; Hansen, 1999; Kusunoki *et al.*, 1998; Nelson and Winter, 1982; Nonaka, 1994.	Social collaboration is important for complex knowledge sharing as it promotes shared values, mental models, and perceptions. Shared experience is also a key to complex knowledge sharing. Professional collaboration is important as it promotes shared professional experience.	Hence, both affect-based trust that promotes social ties and cognition-based trust that promotes professional collaboration are important contributors of complex knowledge sharing.
Transaction Economics	Jensen and Meckling, 1992.	The abstract and systemic nature of complex knowledge makes the process of its sharing risky as it involves a high level of uncertainty. By minimizing risk and uncertainty, trust becomes an important catalyst for knowledge sharing.	Both forms of trust reduce risk of knowledge transfer. Affect-based trust reduces concern for vulnerability and promotes openness. Cognition-based trust promotes professional collaboration with a give-and-take relationship.
Organization Structure	Galbraith, 1977; Lawrence and Lorsch, 1967.	A flexible, loose, and team-based organizational structure is recommended for effective knowledge sharing. This is because the above structural characteristics are suggested to promote professional as well as social interactions.	Both forms of trust improve relationships and enhance communication flow and thus contribute to knowledge sharing.
Product Innovation	Clark and Fujimoto, 1991; Eisenhardt and Tabrizi, 1995; Kusunoki and Numagami, 1997.	Cross functional interactions and professional collaboration improves complex knowledge sharing.	Cognition-based trust helps complex knowledge sharing as it promotes professional collaboration.
Social Network	Krackhardt, 1992; Hansen, 1999; Granovetter, 1973.	Strength of a social network tie has an important influence on knowledge sharing. Strong ties with close and frequent social interactions promote complex knowledge sharing as they reduce problems concerning complex knowledge transfer. Additionally, professional collaboration with weak social ties can also enhance efficient complex knowledge sharing by providing access to novel information.	Affect-based trust increases the strength of social ties and thereby contributes to complex knowledge sharing. Individuals without strong social ties can also share complex knowledge if there is cognition-based trust, which allows shared experience by promoting professional collaboration.

Several underlying factors have been suggested to influence complex knowledge sharing. Social collaboration with close and frequent social interactions is suggested to be important because it improves openness with shared values, mental models, and perceptions. Additionally, effective professional collaboration even with distant and infrequent social interactions is also suggested to be important because it enhances shared experiences. With shared experiences individuals can capture the embedded nuanced contexts in which the knowledge was created and share complex knowledge.

From the above discussion it can be argued that affect-based trust promotes social and emotional ties and enhances shared values, mental models, and perceptions. Shared values and perceptions are suggested as important contributors of complex knowledge sharing. Hence, the above arguments can be formally stated as the following hypothesis:

Hypothesis 1: There is a positive relationship between the level of affect-based trust and the extent of complex knowledge sharing between two individuals.

Additionally, the above discussion can also be used to argue that cognition-based trust enhances complex knowledge sharing. This is mainly because cognition-based trust promotes professional collaboration and helps develop shared professional experience. Shared experience is suggested as an important facilitator of complex knowledge sharing. Hence, the above arguments can be formally stated as the following hypothesis:

Hypotheses 2: There is a positive relationship between the level of cognition-based trust and the extent of complex knowledge sharing between two individuals.

The above arguments clearly suggest that the underlying processes of the influences of affect- and cognition-based trusts on complex knowledge are different. One is based on shared values and mental models and the other is based on shared professional experience. In addition, social network theory, presented in Table 1, suggests that strong social ties improve complex knowledge sharing; however, weak social ties with professional collaboration can also improve such sharing. Hence, the influence of one form of trust on complex knowledge sharing will not depend on the presence of the other form of trust.

Hypothesis 3: The impact of cognition-based trust on complex knowledge sharing does not change if affect-based trust is present and vise versa.

METHOD

Sample and Data Collection

Teams play an important role in knowledge sharing (Anand *et al*., 2003; Nonaka and Takeuchi, 1995). As a result, numerous firms are using team structure as a tool to manage their knowledge (Guzzo and Dickson, 1996). Scholars have proposed that a team setting improves knowledge sharing through extensive interactions and flexibility of collaborative work (Madhavan, 1998; Miles *et al*., 1998). This study uses dyad within a team as the unit of analysis as it tests the influence of trust and knowledge sharing between two individuals working in a team setting. The study was conducted at a large state university. One hundred sixty-four part-time MBA students in their last semester before graduating participated in this study. Most of these students work full-time

outside academia. These students produced 229 unique dyads within 31 teams. As a part of the capstone business policy course, each team was engaged in a major semester-long project. To ensure improved familiarity and communication within each team, all students were required to sit with their team members throughout the semester. The project activity consisted of a comprehensive situation analysis, finding critical problems, and providing creative solutions. Each team required frequent meetings in and outside the classroom. The output of the project was a comprehensive written report and an extensive professional presentation. After completion of the team project report and presentation, the study questionnaire was administered to every student. All the team members participated in the study, ensuring a 100% response rate.

Dependent Variables

A measurement instrument was developed to measure the extent of complex knowledge sharing between team members. The instrument consisted of seven items measured on a five-point scale using "very extensive" and "very limited" as anchors. The items were based on the concept of complex knowledge (Berman *et al*., 2002; Hansen, 1999; Nelson and Winter, 1982; Nonaka, 1994, 1998; Nonaka and Takeuchi, 1995; Polanyi, 1969). Factor loadings resulting from a confirmatory factor analysis (CFA) (Table 2) showed that the scale was unidimensional. Also, the internal consistency results show a high reliability score (alpha = .92). For dyad-level analysis, the composite score of complex knowledge sharing for each dyad was used.

Table 2
Confirmatory Factor Analysis of Multiple-item
Subjective Measure of Complex Knowledge Sharing

ITEMS	FACTOR LOADING
The extent of knowledge that I have gained from this member that can NOT be easily articulated by words or numbers (abstract knowledge and/or ideas).	.84
The extent of knowledge that I have leveraged from this team member that is practical know-how, trick-of-the-trade (cannot be found in a manual or a text).	.85
The extent of knowledge that I have gained from this team member through experiential learning (learning by being with this person NOT from any document crafted by him/her).	.79
The extent of knowledge that I have gained from this member is dependent on other knowledge possessed by him/her (for example, knowledge of calculus is dependent on knowledge of algebra).	.80
The extent of knowledge that I have gained from this member is dependent on the specific situation in which it was created (how to handle a particular situation or situational problem).	.84

The extent of knowledge that I have gained from this member is dependent on his/her culture (s/he acquired this knowledge from the way s/he grew up, values, beliefs, traditions, etc.).	.85
The extent of knowledge that I have gained from this member is dependent on his/her personality (unique individual perceptions).	.86

Independent Variables

Affect- and cognition-based trusts were measured by an instrument adopted from an existing scale in the literature (McAllister, 1995). This instrument consists of ten items measured on a five-point agree/disagree scale. One item from McAllister's original eleven-item measure was dropped as it did not load adequately on either factor. A CFA was conducted and the resulting factor loadings (Table 3) showed the presence of two dimensions. Hence, the CFA confirms high convergent validity as well as discriminate validity (that is, the factor loadings suggested that the respondents discriminated between the two constructs, affect- and cognition-based trusts, as expected). Moreover, the instruments for affect-based and cognition-based trust showed a high degree of internal consistency reliability with alphas of .93 and .91, respectively. For conducting statistical analysis, responses were converted on each of these instruments into a dyad-level score of affect-based trust and cognition-based trust. For each instrument, a composite score was calculated for each dyad by adding all responses of both members of the dyad.

Table 3
Confirmatory Factor Analysis of Multiple-item Subjective Measure of Trust

ITEMS	FACTOR LOADINGS	
	Affect-based	Cognition-based
This member and I can both freely share our feelings and hopes.	.83	
I can talk freely to this member about difficulties I am having at work and know that (s)he will want to listen.	.87	
This member and I would both feel a sense of loss if one of us leaves and we could no longer work together.	.79	
If I share my problems with this person, I know (s)he would respond constructively and caringly.	.86	
I would have to say that we have both made considerable emotional investments in our working relationship.	.81	
This member approaches his/her job with professionalism and dedication.		.80

Given this member's track record, I see no reason to doubt his/her competence and preparation for the job.		.87
I can rely on this member not to make my job more difficult by careless work.		.71
Most people, even those who are not close friends of this member, respect him/her as a co-worker.		.83
Other work associates of mine who must interact with this member consider him/her to be knowledgeable.		.84

Control Variables

Many researchers have suggested that team size has important influence on several team dynamics. Hence, dyadic relationships within teams may be influenced by team size. Also, difference in gender may have a spurious influence on the relationship between trust and knowledge sharing. Hence, team size in terms of the number of team members and gender diversity within dyads were used as controls for testing the dyadic relationship between trust and knowledge sharing. Within each dyad the gender diversity was coded as 0 and 1 for homogeneous and heterogeneous dyads, respectively. Moreover, extent of employment may influence complex knowledge sharing between individuals either by having less time to spend on the project or by having more external knowledge to absorb complex knowledge. Employment was coded as 100% for 80 hours of combined work, and proportionately more or less for the combined work engagement of each dyad.

DATA ANALYSIS AND RESULTS

Descriptive Statistics and Correlations

Using descriptive statistics and bivariate correlations the study assessed the nature of data on each variable and the initial correlations between them. Table 4 provides descriptive statistics and zero order correlation coefficients for all variables used in this study. The extent to which complex knowledge was shared between dyad members correlated positively with both affect-based ($r = .63$, $p < .01$) and cognition-based trust ($r = .69$, $p < .01$). As significant correlation exists between the independent variables affect-based trust and cognition-based trust ($r = .65$, $p < .01$), there is a concern about problems of multicolinearity, which is a violation of a regression assumption. However, affect-based trust and cognition-based trust did not produce similar correlation with all study variables. For instance, affect-based trust produced a significant correlation ($r = .17$, $p < .01$) whereas cognition-based trust produced an insignificant correlation ($r = .04$, $p = .41$).

Table 4
Descriptive Statistics, Correlations and Cronbach's Alphas

	ALPHA	MEAN	STD. DEV.	1	2	3	4	5
1. Gender difference		.48	.50					
2. Team size		5.27	1.39	.02				
3. Employment		99.00	14.50	.02	.05			
4. Affect-based trust	.93	38.75	8.75	-.10	.16*	.17**		
5. Cognition-based trust	.91	41.62	6.96	.01	.15*	.04	.65**	
6. Complex knowledge sharing	.92	49.89	9.93	.06	.19**	.12**	.63**	.69**

* $p < 0.05$ level (2-tailed), ** $p < 0.01$ level (2-tailed).

Hypothesized relationships were tested using hierarchical regression analysis. Although multiple regression models are based on many important assumptions, in most circumstances regression analyses are so robust that the results of such an analysis are still valid even if all assumptions are not fully met (Hair *et al*., 1998). As multicolinearity was a concern, its presence was tested using variance inflation factor (VIF). The VIF values for all independent variables were found to be less than 2, which is well below the multicolinearity level of 10.

To see how much additional variance was explained by the independent variables, the analysis was performed by entering control variables in step 1, independent variables in step 2, and the interaction term in step 3. This process allowed tracing changes in the multiple squared correlation coefficients (R^2) from step to step. Results are summarized in Table 5.

Table 5
Hierarchical Regression Analysis Results

Model	Predictor	Complex Knowledge Sharing		
		Beta	R^2	ΔR^2
1			.03*	.03*
	Gender difference	.06		
	Team size	.17**		
	Employment	.11*		
2			.67**	.64**
	Gender difference	.04		
	Team size	.09*		
	Employment	.04		
	Affect-based trust	.32**		
	Cognition-based trust	.54**		
3			.68**	.01
	Gender difference	.04		
	Team size	.09*		
	Employment	.04		
	Affect-based trust	.31**		
	Cognition-based trust	.51**		
	Affect-based trust X Cognition-based trust	-.05		

* $p < 0.05$, ** $p < 0.01$.

Hypothesis 1 states that the level of affect-based trust between members of a dyad is positively related to the extent of complex knowledge sharing between them. As presented in step 2 of Table 5, the beta coefficient for affect-based trust is positive and significant ($p < .01$). This indicates that the affect-based trust contributes positively to complex knowledge sharing within dyads operating in a team environment. Hence, Hypothesis 1 is supported.

Hypothesis 2 predicts a positive relationship between cognition-based trust and the extent of complex knowledge sharing. Results show that the beta coefficient for cognition-based trust is positive and significant ($p < .01$), indicating that a higher level of cognition-based trust within a dyad is likely to share more complex knowledge. Hence, Hypothesis 2 is confirmed.

Also, addition of these two types of trust to the regression model with the control variables resulted in a significant increase in the multiple square correlation coefficient ($\nwarrow R^2 = .64$, $p < .01$). Thus, the addition of trusts significantly explained 64% of the sharing of complex knowledge within dyads in a team environment beyond what the control variables explained.

Finally, Hypothesis 3 predicts that the influence of affect-based trust and cognition-based trust on complex knowledge sharing is independent of each other. To test this, affect-based trust and cognition-based trust were multiplied and the resulting interaction term was added to the regression model in step 3. As predicted, the beta coefficient of the interaction was not significant. This suggests that the effects of affect-based and cognition-based trust on complex knowledge sharing are independent of each other. Thus, Hypothesis 3 is also supported.

DISCUSSION

This article provides much needed empirical evidence of the positive influence of trust on complex knowledge sharing. The study found that even with two variables (gender diversity and team size) controlled, level of trust within dyads significantly predicted the extent of complex knowledge sharing. However, trust between two members may not improve knowledge sharing with other members of the team. Hence, trust must be developed between every member for it to improve knowledge sharing throughout a team.

McAllister found that, while the two forms of trust are associated, each form "functions in a unique manner and has a distinct pattern of association to antecedent and consequent variables" (1995: 51). The current study applied McAllister's two-dimensional model of trustworthiness to test its influence on a specific consequence variable – complex knowledge sharing.

Results of this study suggest that each of the two forms of trust has a distinct pattern of association to the complex knowledge sharing as they have produced only independent effects on complex knowledge sharing. In addition, the presence of one form of trust does not augment the influence of the other, as the two forms of trust did not produce any interaction effect on complex knowledge sharing. This becomes an important revelation by suggesting that complex knowledge sharing is possible without simultaneous presence of both forms of trust.

Although both forms of trust significantly influence knowledge sharing, their beta weights vary considerably. Cognition-based trust with a beta weight of .54 demonstrates a stronger influence on complex knowledge sharing than that of affect-based trust, which shows a beta weight of .32. Hence, teams, for which knowledge sharing is critical, must focus more on developing cognition-based trust than on developing affect-based trust.

While the results of this study should make valuable contributions to both research and business practice, the study is not free from limitations. Possible limitations revolve

around the nature of the data used for this study. Specifically, these limitations include generalizability problems and common method variance in testing hypotheses. The following discussion addresses the nature of these limitations and steps taken to minimize them and suggestions for future research.

As the results of this study are based on data collected from student teams, one must apply caution when generalizing the results beyond student teams. However, researchers have found that the use of students is appropriate when studying behavioral concepts (Kruglanski, 1975) because they often exhibit various attitudes of the society in general (Gordon *et al*., 1986). In addition, this study used graduating business students working on projects related to real business situations. In addition, many of these students would soon be working for businesses in team settings. Therefore, as the study measures trust variables and suggests their influence on complex knowledge sharing, it can be argued that this student population (graduating business students) provides meaningful information that can be generalized to the real-life business environment with appropriate caution.

Another limitation is the use of self-reported measures where students provided data on both independent and dependent variables. It is possible that the relationships among the independent and dependent variables were inflated due to common method variance. Since the variables used in this study were attitudinal and perceptual, it was necessary to assess the perceptions of the respondents. To assess the potential impact of common method variance, a factor analysis of the independent and dependent variables was performed and the first factor, which is known to contain the best approximation of common method variance, was extracted (Podsakoff and Organ, 1986). Next, the hypothesized relationships were reanalyzed. After partialing out the variance accounted for in the first factor, the nature and significance of the results remain unchanged. This might suggest that common method variance is not operating at such a level that invalidates the findings of this study. However, future research could use different sources for measuring trust and complex knowledge sharing.

Findings of this study have implications for researchers and practicing managers. For research, the finding that specific types of trust positively influence complex knowledge sharing within teams is an important contribution. Although numerous suggestions have been made in the knowledge literature regarding the importance of trust, efforts to test this remain virtually nonexistent. Hence, this study is an important contribution to the knowledge literature. Overall, this work advances the existing literature by providing a theoretical foundation and empirical evidence of the influence of specific types of trust on complex knowledge sharing.

Finally, this study has important implications for managers. Although there are still many organizations that do not value knowledge, as it is not yet core to their businesses, the trend in the American economy would increasingly require them to start considering knowledge as valuable. Modern managers must consider setting up systems that would allow sharing and harnessing knowledge to be fostered in the near future. Empowering people to collaborate, learn and take full advantage of their collective knowledge should be practiced in innovative organizations. However, when promoting collaboration, managers face an important problem of instilling trust into their associates. Even with apt individuals, a team that does not build a trusting relationship is not an effective team as it fails to share complex knowledge.

Managers should strive for a team work environment that is conducive to professional as well as social collaboration. An environment of cooperation should be encouraged. Although team-based performance evaluation may occasionally cause internal dissension (Marshall and Richardson, 1996), such an evaluation can potentially create an environment where people can rely on one another (Cianni and Wnuck, 1997). Team-based performance evaluation is suggested to be effective for work that requires resource sharing, close coordination or that contributes to a common fate (Becker and Mathieu, 2003). Also, a loose organization structure assists knowledge sharing as it allows communication fluidity, cross functional interactions and social networking. Additionally, managers can offer knowledge-enhancing training and organize cross functional collaboration to develop trust among employees. Therefore, a trust-intensive company is proposed here, one that builds trust among its people to ensure organizational knowledge development, which is critical for continuous innovation.

References

Anand, V., M. A. Clark, and M. Zellmer-Bruhn. 2003. "Team Knowledge Structures: Matching Task to Information Environment." *Journal of Managerial Issues* 15 (1): 15-25.

Andrews, K. M. and B. L. Delahaye. 2000. "Influences on Knowledge Processes in Organizational Learning: The Psychosocial Filter." *Journal of Management Studies* 37 (6): 797-810.

Argyris, C. 1999. "Tacit Knowledge and Management." Chapter in *Tacit Knowledge in Professional Practice*. Eds. R. S. Sternberg and J. A. Horvath. Mahwah, NJ: Erlbaum. pp. 123-140.

Barney, J. B. 1986. "Strategic Factor Markets: Expectations, Luck, and Business Strategy." *Management Science* 32: 1231-1241.

————. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17: 99-120.

Becker, W. S. and J. Mathieu. 2003. "Team Performance." Chapter in *The Human Resources Program Evaluation Handbook*. Eds. J. E. Edwards, J. C. Scott, and N. S. Raju. Thousand Oaks, CA: Sage Publications, Inc. pp. 285-300.

Berman, S. L., J. Down, and C. W. L. Hill. 2002. "Tacit Knowledge as a Source of Competitive Advantage in the National Basket Ball Association." *Academy of Management Journal* 45 (1): 13-32.

Blau, P. M. 1964. *Exchange and Power in Social Life*. New York, NY: Wiley.

Cianni, M. and D. Wnuck. 1997. "Individual Growth and Team Enhancement: Moving Toward a New Model of Career Development." *Academy of Management Executive* 11 (1): 105-116.

Clark, K. and T. Fujimoto. 1991. *Product Development Performance: Strategy, Organization, and Management in the World Auto Industries*. Cambridge, MA: Harvard Business School Press.

Davenport, T. H. and L. Prusak. 1998. *Working Knowledge: How Organizations Manage What They Know*. Cambridge, MA: Harvard Business School Press.

Dyer, J. H. and W. Chu. 2003. "The Role of Trustworthiness in Reducing Transaction Costs and Improving Performance: Empirical Evidence From the United States, Japan, and Korea." *Organization Science* 14 (1): 57-69.

Edvinsson L., R. Dvir, N. Roth and E. Pasher. 2004. "Innovations: The New Unit of Analysis in the Knowledge Era: The Quest and Context for Innovation Efficiency and Management of IC." *Journal of Intellectual Capital* 5 (1): 40-58.

Eisenhardt, K. M. and B. N. Tabrizi. 1995. "Accelerating Adaptive Processes: Product Innovation in the Global Computer Industry." *Administrative Science Quarterly* 40 (1): 84-111.

Galbraith, J. R. 1977. *Organization Design*. Reading, MA: Addison-Wesley.

Gambetta, D. 1988. "Can We Trust Trust?" Chapter in *Trust: Making and Breaking Cooperative Relations*. Ed. D. Gambetta. Oxford: Basil Blackwell. pp. 213-237.

Garud, R. and P. R. Nayyar. 1994. "Transformative Capacity: Continual Structuring by Intertemporal Technology Transfer." *Strategic Management Journal* 15 (5): 365-385.

Gordon, M. E., L. A. Slade, and N. Schmitt. 1986. "The 'Science of the Sophomore' Revisited: From Conjecture to Empiricism." *Academy of Management Review* 11 (1): 191-208.

Granovetter, M. 1973. "The Strength of Weak Ties." *American Journal of Sociology* 78: 1360-1380.

Guzzo, R. A. and M. W. Dickson. 1996. "Teams in Organizations: Recent Research on Performance and Effectiveness." *Annual Review of Psychology* 47: 307-388.

Hair, J. F., R. E. Anderson, R. L. Tatham, and W. C. Black. 1998. *Multivariate Data Analysis*, 5th edition. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Hansen, M. T. 1999. "The Search—Transfer Problem: The Role of Weak Ties in Sharing Knowledge Across Organization Subunits." *Administrative Science Quarterly* 44: 82-111.

Hoops, D. G. and S. Postrel. 1999. "Shared Knowledge, 'Glitches,' and Product Development Performance." *Strategic Management Journal* 20: 837-865.

Jensen, M. C. and W. H. Meckling. 1992. "Specific and General Knowledge and Organizational Structure." Chapter in *Contract Economics*. Eds. L. Werin and H. Wijkander. Oxford: Basil Blackwell. pp. 251-274.

Krackhardt, D. 1992. "The Strength of Strong Ties: The Importance of Philos in Organizations." Chapter in *Networks and Organizations: Structure, Form, and Action*. Eds. N. Nohria and R. G. Eccles. Boston, MA: Harvard Business School Press. pp. 216-239.

Kruglanski, A. W. 1975. "The Human Subject in the Psychology Experiment: Fact and Artifact." Chapter in *Advances in Experimental Social Psychology,* Vol. 8. Ed. L. Berkowitz. New York, NY: Academic Press. pp. 101-147.

Kusunoki, K., I. Nonaka, and A. Nagata. 1998. "Organizational Capabilities in Product Development of Japanese Firms: A Conceptual Framework and Empirical Findings." *Organization Science* 9 (6): 699-718.

———— and T. Numagami. 1997. "Intrafirm Transfers of Engineers in a Japanese Firm." Chapter in *Innovation in Japan*. Eds. A. Goto and H. Odagiri. New York, NY: Oxford University Press. pp. 173-203.

Lawrence, P. R. and J. W. Lorsch. 1967. *Organization and Environments*. Cambridge, MA: Harvard University Press.

Madhavan, R. 1998. "From Embedded Knowledge to Embodied Knowledge: New Product Development as Knowledge Management." *Journal of Marketing* 62 (4): 1-12.

Marshall, J. N. and R. Richardson. 1996. "The Impact of Telemediated Services on Corporate Structures: The Example of Branchless Retail Banking in Britain." *Environment and Planning* 28: 1843-1858.

Mayer, R. C., J. H. Davis, and F. D. Schoorman. 1995. "An Integrative Model of Organizational Trust." *Academy of Management Review* 20 (3): 709-734.

McAllister, D. J. 1995. "Affect and Cognition Based Trust as Foundations for Interpersonal Cooperation in Organizations." *Academy of Management Journal* 38 (1): 24-59.

McEvily, S. K. and B. Chakravarthy. 2002. "The Persistence of Knowledge-based Advantage: An Empirical Test for Product Performance and Technological Knowledge." *Strategic Management Journal* 23: 285-305.

————, S. Das, and K. McCabe. 2000. "Avoiding Competence Substitution Through Knowledge Sharing." *Academy of Management Review* 25 (2): 294-311.

Miles, G., R. E. Miles, V. Perrone, and L. Edvinsson. 1998. "Some Conceptual and Research Barriers to the Utilization of Knowledge." *California Management Review* 40 (3): 281-288.

Nelson, R. R. and S. G. Winter. 1982. *An Evolutionary Theory of Economic Change*. Cambridge, MA: Belknap Press of Harvard University Press.

Nonaka, I. 1998. "The Concept of 'ba': Building a Foundation for Knowledge Creation." *California Management Review* 40 (3): 40-55.

————. 1994. "A Dynamic Theory of Organizational Knowledge Creation." *Organization Science* 5: 14-37.

———— and H. Takeuchi. 1995. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York, NY: Oxford University Press.

Pfeffer, J. 1994. "Competitive Advantage Through People." *California Management Review* 36 (2): 20-29.

Podsakoff, P. M. and D. Organ. 1986. "Self-Reports in Organizational Research: Problems and Prospects." *Journal of Management* 12 (4): 531-545.

Polanyi, M. 1966. *The Tacit Dimension*. New York, NY: Anchor Day Books.

————. 1969. *Knowing and Being*. Chicago, IL: University of Chicago Press.

Prahalad, C. K. and G. Hamel. 1990. "The Core Competence of the Corporation." *Harvard Business Review* 68 (3): 79-92.

Rastogi, P. N. 2000. "Knowledge Management and Intellectual Capital – The New Virtuous Reality of Competitiveness." *Human Systems Management* 19 (1): 39-48.

Rumelt, R. 1987. "Theory, Strategy, and Entrepreneurship." Chapter in *The Competitive Challenge*. Ed. D. J. Teece. Cambridge, MA: Ballinger. pp. 556-570.

Spender, J. C. and R. M. Grant. 1996. "Knowledge and the Firm: Overview." *Strategic Management Journal* 17: 5-9.

Teece, D. J. 1977. "Technology Transfer by Multinational Firms: The Resource Cost of Transferring Technological Know-How." *The Economic Journal* 87: 242-261.

Tsai, W. 2002. "Social Structure of 'Coopetition' Within a Multiunit Organization: Coordination, Competition, and Intraorganizational Knowledge Sharing." *Organization Science* 13 (2): 179-192.

Tsang, E. W. K. 2002. "Acquiring Knowledge by Foreign Partners from International Joint Ventures in a Transition Economy: Learning-by-Doing and Learning Myopia." *Strategic Management Journal* 23: 835-854.

Wernerfelt, B. 1984. "A Resource Based View of the Firm." *Strategic Management Journal* 5: 171-180.

Williams, M. 2001. "In Whom We Trust: Group Membership as an Affective Context for Trust Development." *Academy of Management Review* 26 (3): 377-397.

Woods, B. 2001. "Sharing the Intellectual Wealth." *Chief Executive* July: 20-23.

Zand, D. E. 1972. "Trust and Managerial Problem Solving." *Administrative Science Quarterly* 17: 229-239.

JOURNAL OF MANAGERIAL ISSUES
Vol. XXXII Number 1 Spring 2020

Human Resource Configurations, Intellectual Capital, and Organizational Performance

Mark A. Youndt
Assistant Professor of Management
Skidmore College

Scott A. Snell
Professor and Director of Executive Education
Cornell University

Throughout the past fifteen years researchers have examined the link between human resource (HR) activities and organizational-level performance. Many of the early studies in this area simply looked at the performance impacts of individual HR practices such as staffing, training, and compensation in isolation. More recent HR studies have tended to take a more holistic approach to HR by focusing on the performance impacts of systems or configurations of multiple HR activities (e.g., Huselid, 1995; MacDuffie, 1995; Youndt *et al.*, 1996). While both of these lines of research have demonstrated that HR activities can have a positive influence on organizational value creation and performance, neither approach has given us a very clear understanding as to *how* this value-creating process actually occurs. As Becker and his colleagues noted, "To date there is very little research that . . . describes the processes through which HRM systems influence the principal intermediate variables that ultimately affect firm performance" (1997: 40-41). In short, we know very little about the black box between a firm's HR activities and its bottom line.

Accordingly, the purpose of this study is to introduce intellectual capital as a mediating construct between HR configurations and organizational performance, thereby combining research streams in HR and strategic management. Although, academic and business strategists have acknowledged that HR plays a role in developing and managing strategic resources and core competencies, theoretical development and empirical research have been slow to follow. By introducing intellectual capital as a mediating construct, we hope to better frame *how* HR systems drive organizational performance. In essence, this article suggests HR activi-

ties do not directly increase organizational-level performance; rather they help increase employees' knowledge and skills (i.e., human capital), facilitate group interaction and knowledge sharing (i.e., social capital), and enable organizations to store knowledge in systems, routines, processes, and cultures (i.e., organizational capital), which, in turn, drive organizational performance.

In what follows, we begin by outlining a conceptualization of the various aspects on intellectual capital. Next, we examine how different HR configurations might facilitate the development of these various aspects of intellectual capital and how intellectual capital might enhance organizational performance. Then, we test the mediating role of intellectual capital between HR configurations and organizational performance. To conclude, we discuss the implications of our findings and briefly outline several limitations of the present study as well as suggest potential future research directions.

THEORETICAL FRAMEWORK AND HYPOTHESES

Spender and Grant noted in their introduction to *Strategic Management Journal's* special issue on knowledge and the firm that strategy researchers are facing a "growing realization that the variables which are most theoretically interesting are those which are least identifiable and measurable" (1997: 8). Intellectual capital is one such variable. Several writers have presented frameworks, however, to help us conceptualize the construct and make it easier to operationalize for research. Edvinsson and Malone (1997), for example, view intellectual capital as being comprised of two primary components: *human capital* (i.e., the knowledge skills and experience of employees) and *structural capital* (i.e., the embodiment, empowerment, and supportive infrastructure of human capital). The authors then sub-divide structural capital into two smaller components: *organizational capital* (i.e., the systems, tools, and operating philosophy that speed the flow of knowledge through the organization) and *customer capital* (i.e., relationships a company has with its customers).

Stewart (1997) similarly conceives of intellectual capital as composed of human capital and structural capital, but places customer capital on equal footing with structural capital (rather than as a subcategory). He also subsumes organizational capital into structural capital. Bontis (1996), on the other hand, introduces the notion of *relational capital* as an expanded version of customer capital that includes the value of all relationships, including those of customers. Bontis' concept of relational capital is virtually identical to what sociologists and organization theorists refer to as *social capital* (Adler and Kwon, 2002).

Synthesizing the above discussions, we conceptualize intellectual capital as three distinct categories: human, social, and organizational. Whereas *human capital* simply refers to individual employee's knowledge, skills, and expertise, *organizational capital* represents institutionalized knowledge and codified experience stored in databases, routines, patents, manuals, structures, and the like. While some may be apt to refer to this latter knowledge as structural capital (Stewart, 1997), we would argue organizational capital is more fitting because this is capital the organization actually *owns* (human capital can only be

rented/borrowed). The third type of intellectual capital, *social capital*, resides neither at the individual nor the organizational level. Rather, social capital is an intermediary form of intellectual capital consisting of knowledge resources embedded within, available through, and derived from networks of relationships (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998).

HR Configurations and Intellectual Capital

There is a good deal of consensus in the strategic HR literature that combinations, or configurations, of HR practices are more likely to lead organizational-level outcomes such as productivity, profitability, and market value than individual practices used in isolation (e.g., Youndt *et al.*, 1996). More controversial is whether a single set of "best practices" leads to higher performance or whether the appropriateness of HR configurations is contingent on strategy, technology, and the like (Pfeffer, 1994). In this study, we adopt a contingent configurational perspective and hypothesize that the performance impact of HR configurations depends on whether the mediating variable is human, social, or organizational capital. As the dimensions of intellectual capital (and their connections to performance) are conceptually distinct, we believe it is reasonable to suspect that HR configurations will vary accordingly.

HR and Human Capital. As human capital refers to individual employee's knowledge, skills, and expertise, the concept is paramount in any discussion of intellectual capital. The literature on organizational learning, for example, points out organizations, in and of themselves, do not create knowledge, people do (Argyris and Schon, 1978). As individuals learn (i.e., increase their human capital), they create knowledge that potentially forms a foundation for organizational-level learning and knowledge accumulation. Human capital theorists have typically argued that organizations can increase their human capital by internally developing the knowledge and skills of their current employees and/or by attracting individuals with high knowledge and skill levels from the external labor market. That is, organizations can try to *make* and/or *buy* human capital.

Buying Human Capital: Acquisition HR Configuration. Selective staffing practices are often championed as the foundation of an HR strategy focused on acquiring human capital. Operationally, selective staffing can be thought of as two distinct search processes: extensive search and intensive search. *Extensive search* expands the applicant pool by using a wide variety of recruiting sources (e.g., employee referrals, search firms, universities, employment agencies) and increasing the number of candidates screened per hire. *Intensive search*, on the other hand, increases the amount of information gathered about each applicant (via interviews, tests, biographical information, etc.). As Koch and McGrath reason, "assuming a sufficiently well-populated labor market from which to choose, firms that take more care in their search, by increasing information at both the extensive and intensive margins, are more likely to be able to access high-quality new employees" (1996: 339).

Although an acquisition configuration primarily builds on staffing practices, it is likely to be complemented by compensation and reward

systems. To attract the best candidates, companies frequently pay high wages relative to competitors in order to ensure that they meet or exceed market equity. In addition, stock ownership is also espoused to help attract and retain the best and brightest workers. Stewart (1997), for example, pointed out that employee stock ownership programs appear to be increasing in popularity, especially in knowledge-intensive companies. Many of these go public not to raise money for capital expenditures, but rather to share ownership with their most valuable assets—employees.

> ***Hypothesis 1****: An acquisition HR configuration (comprised of selective staffing, external pay equity, and employee ownership) will be positively related to an organization's level of human capital.*

Making Human Capital: Developmental HR Configuration. As an alternative to (or in conjunction with) an acquisition configuration, organizations can enhance their human capital pool through a developmental configuration based on training and education. Training and education have long been the primary focus of human capital theory. More recently, researchers have noted the central role of comprehensive training in firms attempting to transform their workforces from touch labor to knowledge work (Snell and Dean, 1992). Training comprehensiveness encompasses both intensity and scope. Training *intensity* focuses on the depth of intervention, the duration of the programs, and the degree to which they are continuously updated. In contrast, training *scope* focuses on the breadth of training, the different types of training opportunities offered to employees, the utilization of cross-training, and the like.

While training tends to be a focal point in discussions concerning the development of human capital, Becker (1964) originally pointed out that under norms of rationality organizations would prefer programs that produce firm-specific skills that are non-transferable to other companies. In order to capitalize on such training investments, as well as encourage employees to develop firm-specific skills, many theorists suggest that organizations should utilize promotion-from-within, or internal labor markets. In Koch and McGrath's words, "A firm that pays for training and that subsequently fails to promote from within is arguably failing to capitalize on its investment" (1996: 340).

Broadening this HR configuration further, supportive performance feedback is also espoused to facilitate employee development. Although performance appraisal can focus on administrative as well as development functions, it is the developmental aspect that is most expected to influence learning and skill enhancement. Compensation systems, particularly those associated with skill/knowledge-based pay, are also likely to play a significant role in motivating employees to increase their human capital. When companies link pay to the knowledge, skills, and abilities of their workers, they hope to direct the attention of their employees to developmental opportunities and to encourage skill-seeking behavior (Murray and Gerhart, 1998).

> ***Hypothesis 2***: A developmental HR configuration (comprised of comprehensive training practices, promotion-from-within, developmental performance appraisal processes, and skill-based pay) will be positively related to an organization's level of human capital.

HR and Social Capital. The importance of human capital notwithstanding, discussions of intellectual capital and performance transcend knowledge contained within individual employees. From a competitive standpoint, theorists are quick to point out that organizations do not own human capital, employees do. And since those employees are free, within limits, to leave the firm, there is significant risk organizations may incur a capital loss unless individual knowledge is transferred, shared, transformed, and institutionalized. This highlights the need for social (and organizational) capital to protect the investments of organizations in knowledge-based sources of advantage.

There is a growing consensus among researchers that building social capital requires a collaborative organizational environment in which knowledge and information can flow freely. However, there are natural barriers to knowledge exchange, most of which center around power relationships. Szulanski (1996), for example, found that one of the biggest obstacles to the transfer of best practices in organizations is due to poor relationships between the source and recipient of information. Breaking down these vertical (i.e., hierarchical) and horizontal (i.e., cross-functional) barriers requires the cultivation of an open and trusting culture.

Eliminating Vertical Barriers to Social Capital: Egalitarian HR Configuration. In its purist form, an egalitarian organization is a classless organization with minimal power distances between employees. And while no organization can truly function in a purely classless manner, numerous HR activities may help move organizations in this direction. Such HR activities broadly fall into five categories: eliminating status symbols, creating flatter organizations, minimizing job classifications, empowering employees, and utilizing flat pay structures (Pfeffer, 1994).

Status symbols such as executive dining rooms, reserved parking spaces, and corner offices create physical barriers to communication as well as social subdivisions. Accordingly, eliminating status symbols should promote cross-level interactions by breaking down barriers between people. In a like manner, many hierarchical levels can also foster an environment of great power distances which create communication barriers. Therefore, flatter organizational structures (i.e., ones with fewer levels of hierarchy) should increase an organization's capacity to quickly share and leverage knowledge.

The minimization of job classifications, sometimes referred to as broadbanding, should also create a more egalitarian environment where people move about and communicate much more freely. Likewise, flat pay structures de-emphasize pay in organizations and should facilitate quality information exchanges by reducing interpersonal competition and politics. Lastly, by giving employees autonomy and decision-making authority, organizations increase employee involvement in organizational activities which, in turn, should lead to a greater willingness to share and transfer knowledge and information.

> ***Hypothesis 3***: An egalitarian HR configuration (focused on eliminating status symbols, reducing hierarchical levels, minimizing job classifications, flattening wages, and empowering employees) will be positively related to an organization's level of social capital.

Eliminating Horizontal Barriers to Social Capital: Collaborative HR Configu-

ration. McGill and Slocum (1994) argue that work structures in knowledge-based organizations need to be characterized by permeability and network intimacy. That is, the lines between functional departments, between employees and customers, and between the company and its vendors need to be blurred (permeability), and employees need to be kept close together and close to key business processes (network intimacy). Perhaps one of the best ways to bring permeability and network intimacy to life is through organizing around teams and networks, especially cross-functional and joint employee-customer problem-solving ones. To develop the capacity for teamwork and collaboration, organizations may begin by reorienting staffing criteria to focus more on interpersonal skills, and complement this with team training and other cross-functional interactions that facilitate broader knowledge networks. In addition, performance feedback from peers, customers, team members, and even subordinates is likely to facilitate knowledge sharing.

Each of these initiatives is likely to increase the capacity and opportunity for knowledge exchange and combination, but does not guarantee that motivation to do so. Major changes in incentives and culture may be required to motivate knowledge exchange. In many organizations, sharing knowledge dilutes an individual's power base; as such, strong incentives need to be put in place to engender collective exchange. Even in the best of circumstances, a "market for knowledge" exists and there are cost-benefit trade-offs in any person's decision to participate in that market. Group incentives such as bonuses, profit sharing, and gainsharing may help ensure that employees interact and exchange ideas with others as their compensation depends on the performance of one another.

> ***Hypothesis 4***: A collaborative HR configuration (focused on permeable and network intimate work structures, team development, and group incentives) will be positively related to an organization's level of social capital.

HR and Organizational Capital. While human capital embodies the knowledge in individuals and social capital describes the collective exchange of knowledge among people (and systems), organizational capital refers to institutionalized knowledge and codified experience stored in systems, processes, databases, routines, patents, manuals, structures, and the like. Organizational capital is extremely important to organizations, as it is the only type of intellectual capital the organization actually *owns.*

HR's primary responsibilities in developing organizational capital center on creating and/or filling knowledge storage devices or bins. Storage bins can take many forms. For example, an organization's physical assets, such as information systems and internal libraries, can hold vast amounts of knowledge in the form of patents, databases, manuals, etc. Organizational capital is also embedded in standard operating procedures, business processes, rules, routines, and informal "ways of doing business." As Davenport and Prusak noted:

> Any manufacturing process, whether automated or formalized in a set of procedures, is constructed from what was once the knowledge of individuals. In theory, this embedded knowledge is independent of those who developed it and therefore has some organizational stability—an individual

expert can disappear without bringing the process to a halt or reducing the company's stock of embedded knowledge (1998: 83).

Institutionalizing Organizational Capital: Documentation HR Configuration. Institutionalizing knowledge in databases, manuals, and standard operating procedures most likely requires HR's involvement in knowledge codification. For example, encouraging employees to write "lessons learned" reports after learning experiences (e.g., sabbaticals, employee exchange programs, projects) should facilitate the development of organizational capital. Likewise, encouraging employees to continuously update electronic resumes, knowledge "yellow pages," and other knowledge-mapping devices, as well as supporting the formal documentation of customer suggestions, complaints, preferences, etc., are also likely to help build better organizational capital.

Beyond these methods for codifying explicit knowledge, HR systems can also play a role in helping to institutionalize *tacit* knowledge that is more informal and difficult to articulate. For example, empowering employees to initiate the redesign of their work may be a useful method for capturing organizational capital. As employees redesign work systems and structures, their knowledge can become institutionalized in organizational routines, procedures, and the like. Similarly, employee suggestion systems may help expose the entire organization to what was previously individual knowledge.

Hypothesis 5: A documentation HR configuration (focused on knowledge documentation, employee work redesign, and employee suggestion systems) will be positively related to a firm's level of organizational capital.

Interfacing with Organizational Capital: Information Technology HR Configuration. It is very difficult to develop high levels of organizational capital without creating or providing an underlying infrastructure that supports knowledge management and codification. In today's world, such an infrastructure inevitably revolves around information technology. Simply put, information technology has now become the cornerstone of knowledge documentation and codification processes in many of our most successful organizations. As Stewart noted, the emergence of these technologies has spawned "ambitious attempts to pull scattered information and wisdom together to convert it into organizational knowledge. Cheap and powerful information technology has given new impetus to the dream of creating what amount to living libraries containing an entire stock of corporate knowledge" (1997:113).

Such information systems tend to be catalysts for developing organizational capital because they are easily accessible, provide a user-friendly interface, and bring together what were once disparate knowledge repositories into an integrated whole. An organization can encourage employees to document their knowledge, skills, and expertise, but unless they use information technology to make the process somewhat effortless and seamless, knowledge documentation initiatives will most likely have limited success.

Hypothesis 6: An information technology HR configuration (focused on accessible, user-friendly, and integrated information systems) will be positively related to a firm's level of organizational capital.

Having discussed how differing HR systems facilitate the development of

human, social, and organizational capital, we now turn to examining the intellectual capital-performance linkage.

Intellectual Capital and Organizational Performance

Varied literatures and perspectives (e.g., human capital theory, organizational learning theory, information processing theory, resource-based theory) suggest intellectual capital can create value and enhance organizational performance by lowering costs, increasing customer benefits, or doing some combination of the two.

Human Capital and Performance. As stated at the outset, people, or human capital, form the basis of competitive advantage in many of today's organizations and industries. Smarter workers (i.e., ones with more human capital) possess the ability to potentially improve organizational performance by both increasing customer benefits and decreasing production and service delivery costs in a myriad of ways. For example, human capital can help lower production/service delivery costs by developing new process innovations that eliminate costly steps, reduce inputs, increase utilization, and so on. Likewise, better human capital should also lead to better planning, troubleshooting, problem solving, etc., all of which most likely increase production and service delivery efficiencies and, thereby, reduce organizational costs.

Human capital may also be instrumental in improving customer benefits. Total quality management theorists (e.g., Deming, 1986) have argued for years that people form the foundation of quality improvement strategies. When knowledgeable workers improve production and service delivery processes, they not only reduce costs, but they also increase product reliability and customer satisfaction. Similarly, people, as opposed to machines, tend to allow organizations to be more flexible (Upton, 1995). Such flexibility increases customer benefits by quickly providing an array of different products and services when and where customers want them. Lastly, creative people are the heart and soul behind product and service innovations that may increase customer value by better meeting their needs.

> ***Hypothesis 7***: An organization's level of human capital will be positively related to organizational performance.

Social Capital and Performance. Social capital may reduce organizational costs in many of the same ways human capital does. Similar to human capital, the knowledge tied up in relationships among employees, customers, suppliers, alliance partners, and the like may lead to process innovations, better problem solving, and so on, each of which tends to increase production and service delivery efficiencies. Additionally, however, social capital should reduce organizational costs by increasing an organization's information processing capacity. As Galbraith noted (1973), the creation of lateral relations such as task forces and teams (i.e., social capital) facilitates information flows among participants in interdependent departments, thereby eliminating or reducing costly information flows up and down hierarchical channels. Furthermore, the transfer of knowledge through social capital allows organizations to coordinate diverse production skills and integrate multiple

streams of technology as well as leverage knowledge from one part of the organization to another. All of these activities enable organizations to more efficiently utilize their knowledge-base by leveraging it across the entire organization. Stated differently, social capital should help reduce redundancies and effort duplication in multiple parts of organizations.

Again, social capital's improvement of customer benefits parallels many of the notions discussed with regard to human capital and customer benefits above. Just like human capital, social capital most likely drives customer benefits by helping to increase quality, reliability, and flexibility through production and service delivery process innovations. However, we would anticipate that social capital may even have more of an impact on customer benefits than human capital as teams and networks of people should have increased problem-solving capabilities. Likewise, teams and networks of employees, customers, suppliers, and the like should be able to better identify as well as satisfy customer needs. That is, social capital between organizations and their customers aids in identifying idiosyncratic customer needs as well as facilitates the development of novel solutions to address those needs.

> ***Hypothesis 8***: An organization's level of social capital will be positively related to organizational performance.

Organizational Capital and Performance. Organizational capital can play a significant role in reducing organizational costs as well. According to Dixon (1992), these cost reductions result from three primary forces. First, when failure leads to learning it can be the ultimate teacher. Thus, institutionalized experience and knowledge (i.e., organizational capital) can prevent organizations from repeating mistakes, thereby reducing their operating costs. Second, organizational capital can be retrieved and brought to bear on new situations. Whether this institutionalized knowledge is used "wholesale" in its current form, or transformed to meet existing needs, it should help reduce costs by eliminating the need to "reinvent the wheel." Lastly, organizational capital embedded in routines, procedures, information systems, and the like can help filter information as well as direct and simplify information processing and organizational sensemaking, all of which should diminish organizational costs.

The three forces (i.e., minimizing repeat mistakes, increasing knowledge utilization, and facilitating better information processing/sensemaking) that enable organizational capital to reduce organizational costs most likely also help organizations extend customer benefits. For example, minimizing mistakes helps organizations increase their speed to market with new products and services. Likewise, when stored knowledge can be accessed by those organizational members directly in contact with customers, they can use their entire company's knowledge-base to quickly and accurately address customer issues. Additionally, storing important customer information in organizational memory devices enables companies to better keep track of their customers' preferences, needs, behaviors, etc., thereby increasing customer alignment and, hopefully, customer benefits and satisfaction. Many service organizations such as Jiffy Lube, for example, keep detailed customer

records which allow them to quickly service your car with the exact products you favor. In short, organizational capital can assist organizations in giving customers what they want, when they want it, and how they want it.

Hypothesis 9: An organization's level of organizational capital will be positively related to organizational performance.

The Mediating Role of Intellectual Capital Between HR and Performance

As stated at the onset, there has been very little empirical research examining intermediating variables through which HR systems may ultimately affect firm performance. Recently, however, scholars (Becker *et al.*, 1997) have suggested that intellectual capital may play a key mediating role in the HR-performance relationship. That is, HR systems may drive human, social, and organizational capital, which, in turn, may drive organizational performance. And while the underlying relationships have been detailed in Hypotheses 1-9, Hypotheses 10-12 integrate the above arguments to formally test intellectual capital's mediating role in the HR-performance linkage.

Hypothesis 10: Human capital will mediate the relationships between the acquisition and development HR configurations and organizational performance.

Hypothesis 11: Social capital will mediate the relationships between the egalitarian and collaborative HR configurations and organizational performance.

Hypothesis 12: Organizational capital will mediate the relationships between the documentation and information systems HR configurations and organizational performance.

METHODS

Sample

A broad group of organizations and industries was included in the study to maximize variation of the independent variables as well as to increase the generalizability of the findings. However, only public, single business unit organizations with more than one hundred employees were included in the study for the following reasons. First, the study required comprehensive organizational-level performance data. Second, as HR practices and competitive strategies may differ across autonomous business units, we decided to exclude multidivisional organizations. Lastly, only organizations with more than one hundred full-time employees were selected in an effort to increase the likelihood that participating organizations utilized a somewhat formalized HR system. We selected the 919 organizations meeting these criteria from the *Directory of Corporate Affiliations.*

Data Collection Procedures and Variables

A cover letter and questionnaire were mailed directly to the two highest ranking executives (usually the CEO and president) as well as the vice-president of HR in each of the 919 organizations. Executives from 208 of the organizations returned usable questionnaires, representing an organizational response rate of 23 percent. The 208 organizations represented 134 different four-digit SIC codes, had an average of 4,019 full-time employees, and had mean annual revenues of $771 million. Of the 208 participating firms, 71 had two or three respondents. For these 71 firms

we calculated interrater agreements for each of our HR indices and intellectual capital constructs according to the R_{wg} procedures prescribed by James, Demaree, and Wolf (1993). The resulting R_{wg}s for each of the variables ranged from .87 to .94. These results support the aggregation of data to the firm level (i.e., we can average the responses of multiple respondents from one firm for our analysis). Additionally, by indicating that multiple top-level executives from the same firm provided very similar responses, there is evidence to suggest that whether we had responses from one or numerous executives from each firm our results would be similar. Thus, the potential problem of using a single respondent for some of our firms is diminished.

Intellectual Capital. As few published empirical research efforts exist pertaining to intellectual capital, we reviewed theoretical discussions surrounding human capital, intangible assets, organizational learning, and the like to develop multi-item scales of the three subcategories of intellectual capital. Additionally, as our study spanned more than 100 industries, it required the use of generalizable metrics and wording in crafting the specific human, social, and organizational capital items. The five items assessing *human capital* (alpha = .81) were based on original discussions surrounding human capital (Becker, 1964; Schultz, 1961), as well as contemporary strategic human resource management studies (e.g., Snell and Dean, 1992), and reflect the overall skill, expertise, and knowledge levels of an organization's employees. Likewise, *organizational capital* (alpha = .62) was measured by a four-item scale assessing an organization's ability to appropriate and store knowledge in physical organizational-level repositories such as databases, manuals, and patents (Davenport and Prusak, 1998; Edvinsson and Malone, 1997) as well as in less tangible routines, processes, cultures, and ways of doing business (Stewart, 1997; Walsh and Ungson, 1991). Lastly, the five items measuring *social capital* (alpha = .88) draw upon the core ideas of the social structure literature (Adler and Kwon, 2002; Nahapiet and Goshal, 1998), as well as the more specific knowledge management literature (Nonaka, 1994), and assess an organization's overall ability to share and leverage knowledge among and between networks of employees, customers, suppliers, alliance partners, and the like.

To test the convergent and discriminant validity of the multiple-item scales of human, social, and organizational capital, we performed confirmatory maximum likelihood factor analysis. The intellectual capital model confirmed the three distinct aspects of intellectual capital (human, social, and organizational) by replicating their designed scales. The resulting three factors explained 51% of the total variance, had eigenvalues of 1.77, 4.96, and 1.54, and had average communality of .67. Additionally, no item cross-loaded on another dimension at a level higher than .33. See Appendix A for the results of the intellectual capital factor analysis and a detailed listing of all the intellectual capital items.

Human Resource Configurations. The study utilized six distinct HR configurations focused on building intellectual capital: 1) Acquisition configuration, 2) Developmental configuration, 3) Egalitarian configuration, 4) Collaborative configuration, 5) Documentation configuration, and 6) Infor-

mation Technology configuration. The items for the Acquisition and Development HR configurations were based on the prior empirical studies of Snell and Dean (1992) and Youndt *et al.* (1996). As no published, empirical scales or indices existed for our other four HR configurations, items for these indices were derived from theoretical discussions surrounding the development of the various forms of intellectual capital. Specifically, we drew upon Pfeffer's (1994) work on how organizations gain competitive advantage through people and McGill and Slocum's (1994) discussions on building "smarter organizations" in developing our Egalitarian and Collaborative HR configurations, while our Documentation and Information Systems configurations were based on Stewart (1997) and Davenport and Prusak's (1998) discussions surrounding how certain employee practices and information systems aid in the codification and storage of knowledge.

Following the procedures used by Koch and McGrath (1996), MacDuffie (1995), and Youndt *et al.* (1996), each configuration was operationalized as an additive index of multiple HR activities outlined in our theory and hypotheses section. Such an additive approach to combining HR activities implies organizations can improve their effectiveness either by using individual practices in a more comprehensive manner or by increasing the number of practices they employ within the system. This approach is better conceptually and empirically than a multiplicative approach to creating HR systems because it does not reduce the index value to zero if a single HR practice is absent from the system. Instead, the absence of a practice only weakens the net effect of the system (MacDuffie, 1995). See Appendix B for detailed descriptions of the HR configurations.

Organizational Performance. An assessment of an organization's performance should include multiple measures (Venkatraman and Ramanujam, 1986). Accordingly, we utilized a composite performance metric consisting of both asset- (ROA) and equity-based (ROE) performance measures. Specifically, *organizational performance* was calculated by averaging each organization's 2000 and 2001 ROA and ROE. We utilized a two-year average to help guard against random fluctuations and anomalies in the data (Venkatraman and Ramanujam, 1986). Additionally, we used 2000 and 2001 performance data to lag our dependent variable two to three years from the data collection of our independent variables in an effort to minimize the potential effect of successful organizations possessing more slack resources to invest in HR activities and intellectual capital development. All performance data were obtained through *Disclosure* and *Research Insight.*

Control Variables. Since numerous studies have shown that large organizations exhibit better performance than smaller ones, we controlled for any potential extraneous effects of organizational size. Similar to other HR studies, o*rganizational size* was operationalized as the number of employees and was obtained from the *Directory of Corporate Affiliations.* We also controlled for *R&D intensity* (R&D/sales) due to its potential influence on intellectual capital development. Data for R&D intensity were obtained from *Disclosure, Research Insight,* and *Bloomberg.* Additionally, as organizations' HR activities, intellectual capi-

tal investments, and performance outcomes may systematically differ across industries, we controlled for three industry dimensions (munificence, dynamism, and complexity), as suggested by Dess, Ireland, and Hitt (1990). Following Boyd (1990), industry *munificence,* or resource abundance, was measured as the regression slope coefficient divided by mean sales value when regressing time against industry sales for the past five years. *Dynamism,* or volatility, was assessed using the same regression model and was measured as the standard error of the regression slope coefficient divided by the mean sales value. Lastly, *complexity,* or heterogeneity in the environment, was assessed using the MINL formula of sales concentration (Schmalensee, 1977). Data for the industry measures were obtained from *U.S. Industrial Outlook, StatUSA, Census of Manufacturers,* and *Moody's.*

RESULTS

All of the variables used in the study exhibited normal distributions, and we found no evidence of restriction of range in any of the response scales. For more details surrounding the variables' properties, see Table 1 which highlights the variables' means, standard deviations, alphas, R_{wg}s, and correlations.

HR Configurations and Intellectual Capital (Hypotheses 1 - 6)

To test the notion that the different HR configurations would be related to human, social, and organizational capital, we used multiple regression analysis controlling for size, industry effects, and R&D intensity. These results appear in Table 2. As predicted in Hypotheses 1 and 2, the acquisition (Beta = .164, $p < .05$) and developmental (Beta = .235, $p < .01$) HR configurations were significantly related to an organization's level of human capital. With regard to social capital, the egalitarian HR configuration was not significantly related to an organization's level of social capital. Thus, we found no support for Hypothesis 3. As anticipated in Hypothesis 4, however, the collaborative HR configuration (Beta = .215, $p < .05$) was significantly related to social capital. Lastly, both the documentation (Beta = .227, $p < .01$) and information systems (Beta = .271, $p < .01$) HR configurations were significantly related to an organization's level of organizational capital, supporting Hypotheses 5 and 6. Although not hypothesized, the egalitarian HR configuration was significantly related to human capital (Beta = .185, $p < .05$), and the acquisition HR configuration was significantly related to organizational capital (Beta = .248, $p < .01$).

Intellectual Capital and Organizational Performance (Hypotheses 7, 8, and 9)

To test the notion that human, social, and organizational capital would be positively related to performance, we once again used multiple regression analysis controlling for size, industry effects, and R&D intensity. These results appear in Equation 2 in Table 3. Human capital (Beta = .211, $p < .05$), social capital (b = .396, $p < .01$), and organizational capital (b = .189, $p < .05$) were all significantly related to organizational performance, providing strong support for Hypotheses 7-9 and the contention that intellectual capital plays a signif-

Table 1
Descriptive Statistics

	Variables	Mean	std	alpha	R_{wg}	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Size	7.10	1.50	na	na	1													
2	Complexity	.31	.16	na	na	-.02	1												
3	Dynamism	.02	.01	na	na	-.13	.15	1											
4	Munificence	.05	.05	na	na	.05	-.08	-.09	1										
5	R&D Intensity	.05	.13	na	na	-.07	.03	-.04	.15	1									
6	Acquisition HR	3.52	.57	na	.88	.03	.09	.00	-.01	-.03	1								
7	Developmental HR	3.38	.61	na	.91	.01	.09	-.05	.04	.01	.48	1							
8	Egalitarian HR	3.28	.62	na	.94	-.05	.19	.09	.13	-.07	.27	.38	1						
9	Collaborative HR	3.23	.67	na	.87	.01	.15	.10	.03	-.01	.23	.26	.39	1					
10	Documentation HR	2.67	.62	na	.88	.03	.16	-.05	.06	.11	.20	.24	.16	.31	1				
11	Info. Systems HR	3.20	.88	na	.89	.03	-.01	-.05	.05	.17	.18	.15	.13	.27	.43	1			
12	Human Capital	3.63	.82	.81	.91	.01	.13	.02	.16	.33	.34	.37	.24	.15	.20	.13	1		
13	Social Capital	3.69	.86	.88	.93	.07	.05	.05	.07	.01	.27	.18	.21	.39	.25	.20	.44	1	
14	Organizational Capital	2.85	.72	.62	.87	.10	.14	.09	.12	.27	.34	.18	.18	.19	.48	.39	.23	.11	1
15	Performance	.05	.08	na	na	-.01	.07	.07	.12	.06	.22	.32	.20	.28	.05	.12	.35	.45	.31

N = 208
Correlations > .20 significant at $p < .05$

Table 2
Results of Regression Analysis for
HR Configurations and Intellectual Capital

	Human Capital Standardized Beta	Social Capital Standardized Beta	Organizational Capital Standardized Beta
Size	.062	.076	-.054
Complexity	.035	.005	.030
Dynamism	.053	.061	.168*
Munificence	.085	.087	.114
R&D Intensity	.229**	-.012	.201**
Acquisition HR	.164*	.096	.248**
Developmental HR	.235**	-.013	-.062
Egalitarian HR	.185*	.133	-.071
Collaborative HR	-.030	.215*	.064
Documentation HR	.148	.159	.227**
Information Systems HR	-.054	.045	.271**
R^2	.340	.280	.428
F	6.320***	4.830**	9.191***

*p < .05, **p < .01, ***p < .001

icant role in determining firm performance. Additionally, the intellectual capital-performance relationships are not only statistically significant, but practically meaningful as well. For example, a one standard deviation increase in organizational capital increases performance (ROA and ROE) by 35%.

The Mediating Role of Intellectual Capital (Hypotheses 10, 11, and 12)

A comparison of numerous regression equations was required to test the notion that intellectual capital mediates the relationship between HR configurations and organizational performance. In Table 3 the first equation shows the effects of the HR configurations on performance and, as pointed out above, the second equation shows the effects of intellectual capital on performance. Without significant effects here for HR and intellectual capital on performance, there is no possibility of mediation. As the results in the table indicate, the acquisition (Beta = .174, $p < .05$), developmental (Beta = .222, $p < .01$), egalitarian (Beta = .178, $p < .05$), and collaborative (Beta = .241, $p < .01$) HR configurations are significantly related to performance and, as highlighted in the previous section, all three intellectual capital variables are also significantly related to performance. Since we found no significant relationships between the documentation and information systems HR configurations and performance, we can eliminate the possibility of organizational capital mediating any relationships between these vari-

Table 3
Results of HR, Intellectual Capital, and Performance Mediation Regression Analysis

	Equation 1 Standardized Beta	Equation 2 Standardized Beta	Equation 3 Standardized Beta	Equation 4 Standardized Beta	Equation 5 Standardized Beta
Size	.046	.022	.034	.020	.020
Complexity	-.017	.021	-.024	-.018	-.021
Dynamism	.120	.069	.109	.099	.088
Munificence	.096	.048	.079	.066	.057
R&D Intensity	.069	.035	.023	.073	.052
Acquisition HR	.174*		.113	.161*	.092
Developmental HR	.222**		.165	.227**	.163
Egalitarian HR	.178*		.167*	.146	.141
Collaborative HR	.241**		.248**	.173*	.170*
Documentation HR	-.050		-.080	-.106	-.125
Info. Systems HR	.110		.121	.094	.086
Human Capital		.211*	.222**		.171*
Social Capital		.396***		.354***	.339***
Organizational Capital		.189*			.139
R^2	.431	.391	.458	.533	.547
F	9.285***	6.53***	9.422***	12.767***	10.915***

*p < .05, **p < .01, *** p < .001

ables and performance (Hypothesis 12).

In the third equation, we again examined the HR configurations' effects on performance, but this time we also added human capital to the equation. Evidence of mediation exists when a significant Beta for the acquisition and developmental HR configurations in the first equation diminishes substantially (perhaps to nonsignificance) in the third equation after human capital has been accounted for. As the results indicate, both the acquisition and developmental Betas dropped to nonsignificance. Thus, we have strong support for Hypothesis 10 and can conclude that most of these HR configurations' effects on performance are derived through their ability to build human capital, which, in turn, drives performance.

We tested social capital's mediating role (Hypothesis 11) in the fourth equation. As the egalitarian HR configuration was not significantly related to social capital, social capital's potential mediating role was limited to the collaborative HR and performance linkage. In comparing the Betas for collaborative HR in equations 1 and 4, we see a substantial decrease (from Beta = .241, $p < .01$ to Beta = .173, $p < .05$). Thus, we can conclude that social capital mediates the relationship between collaborative HR and performance and have partial support for Hypothesis 11.

In Equation 5 we tested an overall model incorporating the six HR configurations and three intellectual capital variables to assess the relative importance of all the variables as well as to determine to what degree the various HR configurations' effects on performance were operating through some combination of the three intellectual capital measures. The results in this equation point out that most of the HR configurations' effects on performance are operating through the intellectual capital variables and that human and social capital are the primary drivers of performance.

DISCUSSION

This study provides consistent support for the notion that HR systems are fundamental in the development of intellectual capital. Not surprisingly, investments made to attract and select the best and brightest workers were shown to correspond to an organization's human capital. Likewise, comprehensive training and development efforts were also shown related to an organization's human capital. These results validate the arguments of human capital theorists who suggest organizations have the option of either buying or making human capital. When only looking at the level of human capital (as opposed to specific skills and knowledge), it appears selection and training may act as substitutes for one another. Accordingly, companies that do not possess the resources to engage in both comprehensive training and selection activities may be wise to primarily focus their resources on one or the other.

Moving on to social capital, the reduction of vertical organizational barriers through the use of egalitarian work practices that minimize status differences was not related to an organization's social capital; however, the reduction of horizontal barriers through the use of collaborative HR activities was related to an organization's knowledge sharing and transfer. This finding echoes the convictions of executives such as Jack Welch

(Ex-CEO of General Electric) who have vocally supported the boundaryless organization as a means to promote teamwork and group problem solving and decision making. Simply put, it appears one of the quickest and best ways to build a trusting and open culture where people freely share and seek information is to eliminate as many horizontal organizational barriers as possible. As functional, divisional, and other barriers break down and ultimately disappear, social capital can prosper and grow because people have much greater access to one another as well as the motivation and incentive to utilize this newly developing knowledge network.

With regard to organizational capital, the utilization of user-friendly and easily accessible information systems and the use of HR activities that encourage knowledge documentation (e.g., employee work redesign programs, employee suggestion systems, lessons learned reports) both appear to help organizations institutionalize knowledge. Thus, organizations seeking to transfer knowledge from people into organizational structures and systems should invest in "hard" information infrastructures as well as "softer" management systems that motivate employees to share and record their expertise. These latter management systems appear to be very important because, without the proper incentives, employees may be reluctant to document their unique knowledge for fear of losing their expert power and essential roles.

The study also found each of the three types of intellectual capital to be associated with increased organizational performance in the intellectual capital-performance regression model (Equation 2). In the overall model containing the intellectual capital variables and the HR configurations (Equation 5), however, only human capital and social capital exhibited strong relationships with performance. The human capital-performance linkage lends support to the widespread anecdotal evidence suggesting that talented people are a critical, and maybe even *the* critical, ingredient in developing and delivering superior products and services that generate high consumer demand. Scholars and practitioners have argued for quite some time that many of the fastest growing companies over the past several decades (e.g., Southwest Airlines, Tyson Foods, Wal-Mart) achieved their phenomenal growth and competitive advantage through their talented people (Pfeffer, 1994).

Social capital was by far the strongest predictor of performance in the study. Thus, it is not surprising that there has been a recent surge in interest and research surrounding social capital (e.g., Adler and Kwon, 2002; Kostova and Roth, 2003). Such a strong linkage between social capital and performance supports those whose contend that knowledge tied up in relationships among employees, customers, suppliers, alliance partners, and the like tends to lead to process and product innovations, better problem solving, and so on, all of which increase production and service delivery efficiencies as well as customer satisfaction. Also, social capital may enable organizations to more efficiently utilize their knowledge-base by leveraging it across the entire organization and thereby reduce redundancies, effort duplication, and ultimately organizational costs.

One could argue that the reason the relationship between organizational capital and performance becomes statistically non-significant when adding all the HR configurations into the performance regression model might be due to its strong correlation with Acquisition HR. Organizational learning theorists (e.g., Argyris and Schon, 1978; Nonaka, 1991) have pointed out for years that organizations—in and of themselves—do not create knowledge, people do. That is, individuals (i.e., human capital) form the foundation for organizational-level learning and knowledge accumulation (i.e., organizational capital). Thus, it seems logical that Acquisition HR enables organizations to attract more talented employees who, in turn, are the driving force behind knowledge development. Further, it seems reasonable to assume that some of this individual-level knowledge ultimately turns into organizational capital in the form of patents, databases, routines, systems, etc. Hence, there is a connection between Acquisition HR and organizational capital that creates multicollinearity among these variables in our overall performance regression model.

As hypothesized, most of HR's performance effects were mediated by the intellectual capital variables. Collaborative HR, however, was still a predictor of performance after including the intellectual capital measures in our performance regression model. This suggests that organizational efforts to encourage collaboration not only support the development of social capital, but also aid in other organizational activities and outcomes that directly or indirectly influence organizational performance. For example, Adler and Kwon (2002) point out that social networks and collaboration create value for organizations by building cohesiveness, trust, and a strong organizational culture among employees. Thus, managers should take note of the widespread performance benefits resulting from the utilization of HR activities that support collaboration.

With regard to intellectual capital's mediating role in the HR-performance linkage, this study provides both managers and academics with a more fine-grained analysis of how to target HR investments that build human and social capital, which, in turn, drive performance. Instead of simply investing in HR with the hope that a trickle-down effect on performance will occur, we now have a clearer understanding as to what happens in the large black box between micro HR activities at the one end and macro performance measures at the other.

Limitations and Future Directions

In interpreting the results of this study, several limitations should be kept in mind. First, although we developed our theoretical arguments in terms of HR activities facilitating the development of intellectual capital, which, in turn, drives organizational performance, other sequences are certainly possible. For example, it is reasonable to contend that firms with high levels of intellectual capital and/or performance may possess the knowledge and slack resources required to invest in HR activities (which is why we lagged our performance variable two years). Future research might look at HR investments, intellectual capital, and performance over time to replicate our findings or determine if other sequential and re-

ciprocal relationships exist among these variables.

Second, we synthesized previous work surrounding the various aspects of intellectual capital into a unified typology consisting of human, social, and organizational capital. However, it may also be appropriate to approach intellectual capital from other levels of analysis. For example, while recognizing the importance of these three distinct aspects of intellectual capital, it may prove beneficial to move beyond the independent analysis of each to examine the effects of their coexistence. Conversely, researchers (e.g., Adler and Kwon, 2002; Kostova and Roth, 2003; Nahapiet and Ghoshal, 1998) have also indicated that human capital, social capital, and organizational capital may have multiple dimensions. Thus, we need more research to clarify the make-up of these variables as well as determine their relative independence.

Third, we encompassed a significant portion of the organizational performance domain by using both equity and asset-based measures (ROE and ROA) to assess the relationships between HR, intellectual capital, and performance. Nonetheless, all performance measures have their limitations. Asset-based performance measures such as ROA, for example, tend to overstate the performance impacts of intangible assets such as intellectual capital because they understate organizations' capital bases. Sales-based metrics may also overstate the performance benefits of intellectual capital because they do not take into account the costs of developing and utilizing such capital. Thus, future intellectual capital research should employ a host of organizational performance metrics such as economic value added (EVA) to gain a more complete understanding of the performance outcomes of intellectual capital.

Fourth, the HR configurations explained only twenty-eight percent of the variance in social capital, the most important predictor of organizational performance. In order to better understand how organizations can facilitate the development of this important construct, future empirical studies should examine other variables such as boundary spanning activities, market relations, hierarchical relations, symbols, and values that recent theoretical discussions suggest might be instrumental in social capital formation (e.g., Adler and Kwon, 2002; Kostova and Roth, 2003). Similarly, it would be helpful if future research moved beyond HR activities to explore other variables (e.g., organizational design and R&D investments) prescribed to build human and organizational capital.

In conclusion, all the recent hype surrounding intellectual capital appears warranted. Intellectual capital does play a significant role in determining organizational performance and, consequently, we need to better understand how to build, manage, and leverage it. While this study has focused on HR's role in developing intellectual capital, a host of other organizational activities most likely play a very important role as well.

Appendix A
Factor Analysis for Intellectual Capital

	1	2	3
Human Capital			
Our employees are highly skilled.	.17	**.66**	.11
Our employees are widely considered the best in our industry.	.18	**.52**	-.01
Our employees are creative and bright.	.16	**.63**	.14
Our employees are experts in their particular jobs and functions.	.17	**.65**	.07
Our employees develop new ideas and knowledge.	.23	**.76**	.19
Social Capital			
Our employees are skilled at collaborating with each other to diagnose and solve problems.	**.77**	.21	-.01
Our employees share information and learn from one another.	**.85**	.28	.06
Our employees interact and exchange ideas with people from different areas of the company.	**.81**	.15	.08
Our employees partner with customers, suppliers, alliance partners, etc., to develop solutions.	**.54**	.33	.04
Our employees apply knowledge from one area of the company to problems and opportunities that arise in another.	**.71**	.23	.11
Organizational Capital			
Our organization uses patents and licenses as a way to store knowledge.	-.11	.19	**.40**
Much of our organization's knowledge is contained in manuals, databases, etc.	.15	-.04	**.98**
Our organization's culture (stories, rituals) contains valuable ideas, ways of doing business, etc.	.16	.27	**.46**
Our organization embeds much of its knowledge and information in structures, systems, and processes.	.12	.11	**.50**
eigenvalue	4.96	1.77	1.54
percent of variance	21.74%	18.31%	10.58%

Appendix B
HR Configurations

Acquisition:
- Our hiring process is thorough and comprehensive.
- We screen many applicants to fill job openings.
- We use many different recruiting sources.
- We pay higher wages than our competitors.

Developmental:
- Our training and development activities are comprehensive.
- We spend more money per employee on training than our competitors.
- Our employees spend more hours a year training than our competitors.
- We provide continuous developmental opportunities for our employees.
- We offer many different types of training programs.
- Our performance appraisal process tolerates mistakes that are non-repetitive.
- Our employees receive a lot of developmental feedback.
- We try to promote from within.
- Our employees are rewarded for their knowledge/skill development.

Egalitarian:
- We try to eliminate and minimize status symbols.
- Our organizational structure minimizes the number of hierarchical levels.
- Our jobs encourage empowerment and participation.
- We have few job classifications.
- We have a narrow range of pay grades.

Collaborative:
- We select job candidates based on their interpersonal skills.
- We select job candidates based on their ability to collaborate and work in teams.
- Our training and development programs incorporate team building.
- Our performance appraisal system uses multiple inputs (peers, customers, subordinates, etc.).
- We utilize group-based incentives (gainsharing, group bonuses, etc.).
- Our jobs involve a lot of teamwork.
- We utilize cross-functional teams and networks.
- We have joint employee-customer teams and networks.

Documentation:
- We encourage employees to write "lessons learned" reports after learning experiences (employee exchange programs, projects, etc.).
- Our employees help redesign work systems.
- We encourage our employees to continuously update our company's knowledge databases.
- We have a successful employee suggestion program.

Information Systems:
- Our information systems are user-friendly.
- Our information systems are accessible to all employees.
- Our information systems are integrated with each other.
- We utilize groupware, email, etc.

References

Adler, P. S. and S. Kwon. 2002. "Social Capital: Prospects for a New Concept." *Academy of Management Review* 27: 17-40.

Argyris, C. and D. A. Schon. 1978. *Organizational Learning: A Theory of Action Perspective.* Reading, MA: Addison-Wesley.

Becker, B. E., M. A. Huselid, P. S. Pinkus, and M. F. Spratt. 1997. "HR as a Source of Shareholder Value: Research and Recommendations." *Human Resource Management* 36(1): 39-47.

Becker, G. S. 1964. *Human Capital.* New York, NY: Columbia University Press.

Bontis, N. 1996. "There's a Price on Your Head: Managing Intellectual Capital Strategically." *Business Quarterly* 60(4): 40-47.

Boyd, B. 1990. "Corporate Linkages and Organizational Environment: A Test of the Resource Dependence Model." *Strategic Management Journal* 11: 419-430.

Davenport, T. H. and L. Prusak. 1998. *Working Knowledge: How Organizations Manage What They Know.* Boston, MA: Harvard Business School Press.

Deming, W. E. 1986. *Out of Crisis.* Cambridge, MA: MIT Center for Advanced Engineering Study.

Dess, G. G., R. D. Ireland, and M. A. Hitt. 1990. "Industry Effects and Strategic Management Research." *Journal of Management* 16(1): 7-27.

Dixon, N. M. 1992. "Organizational Learning: A Review of the Literature with Implications for HRD Professionals." *Human Resource Development Quarterly* 3(1): 29-49.

Edvinsson, L. and M. S. Malone. 1997. *Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower.* New York, NY: Harper Business.

Galbraith, J. R. 1973. *Designing Complex Organizations.* Reading, MA: Addison-Wesley.

Huselid, M. A. 1995. "The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance. *Academy of Management Journal* 38: 635-672.

James, L. R., R. G. Demaree, and G. Wolf. 1993. "R_{wg}: An Assessment of Within-group Interrater Agreement." *Journal of Applied Psychology* 78: 306-309.

Koch, M. J. and R. G. McGrath. 1996. "Improving Labor Productivity: Human Resource Management Policies Do Matter." *Strategic Management Journal* 17: 335-354.

Kostova, T. and K. Roth. 2003. "Social Capital in Multinational Corporations and a Micro-Macro Model of its Formation." *Academy of Management Review* 28: 297-317.

MacDuffie, J. P. 1995. "Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry." *Industrial and Labor Relations Review* 48(2): 197-221.

McGill, M. E. and J. W. Slocum. 1994. *The Smarter Organization: How to Build a Business That Learns and Adapts to Marketplace Needs.* New York, NY: Wiley.

Murray, B. and B. Gerhart. 1998. "An Empirical Investigation of a Skill-based Pay Program and Plant Performance Outcomes. *Academy of Management Journal* 41: 68-78.

Nahapiet, J. and S. Ghoshal. 1998. "Social Capital, Intellectual Capital, and the Organizational Advantage." *Academy of Management Review* 23: 242-266.

Nonaka, I. 1994. "A Dynamic Theory of Organizational Knowledge Creation." *Organization Science* 5(1): 14-37.

Pfeffer, J. 1994. *Competitive Advantage Through People: Unleashing the Power of the Workforce.* Boston, MA: Harvard Business School Press.

Schmalensee, R. 1977. "Using the H-index of Concentration with Published Data." *Review of Economics and Statistics* 59: 186-213.

Schultz, T. W. 1961. "Investment in Human Capital." *American Economic Review* 51(March): 1-17.

Snell, S. A. and J. W. Dean. 1992. "Integrated Manufacturing and Human Resources Management: A Human Capital Perspective." *Academy of Management Journal* 35: 467-504.

Spender, J. C., and R. M. Grant. 1997. "Knowledge and the Firm: Overview." *Strategic Management Journal* 17: 5-9.

Stewart, T. A. 1997. *Intellectual Capital.* New York, NY: Doubleday-Currency.

Szulanski, G. 1996. "Exploring Internal Stickiness: Impediments to the Transfer of Best Practices within the Firm." *Strategic Management Journal* 17(S2): 27-44.

Upton, D. A. 1995. "What really makes factories flexible?" *Harvard Business Review* 73(4): 74-84.

Venkatraman, N. and V. Ramanujam. 1986. "Measurement of Business Performance in Strategy Research: A Comparison of Approaches." *Academy of Management Review* 11: 901-814.

Walsh, J. P. and G. R. Ungson. 1991. "Organizational Memory." *Academy of Management Review* 16: 57-91.

Youndt, M. A., S. A. Snell, J. W. Dean, and D. P. Lepak. 1996. "Human Resource Management, Manufacturing Strategy, and Firm Performance. *Academy of Management Journal* 39: 836-866.

JOURNAL OF MANAGERIAL ISSUES
Vol. XXXII Number 1 Spring 2020

Managing Emotions In The Workplace

J. Andrew Morris
Assistant Professor of Management
University of St. Thomas

Daniel C. Feldman
Distinguished BPF Fellow
Professor of Management
University of South Carolina

Over the past ten years, increasing attention has been given to how workers express emotions in a variety of work settings (Ashforth and Humphrey, 1995; Rafaeli and Sutton, 1987, 1989; Sutton, 1991; Wharton and Erickson, 1993). An underresearched, yet critical, aspect of the literature on emotions in organizational life concerns employers' attempts to control and direct how employees display emotions to customers. Emotional labor, generally defined as the act of expressing organizationally-desired emotions during service transactions (Ashforth and Humphrey, 1993; Hochschild, 1983), is the central focus of this study. This article seeks to extend previous theoretical and empirical research on emotional labor in four ways.

First, a more rigorous conceptualization of emotional labor is presented. By drawing on previous emotional labor studies, psychological and anthropological research on emotions, and impression management studies, a three-component conceptualization of emotional labor will be advanced. The framework presented here suggests that emotional labor can best be described in terms of frequency of emotional labor, duration of emotional labor, and emotional dissonance experienced as a result of having to express emotions one may not actually feel.

The second objective is to identify the organizational and job characteristics which might predict emotional labor. Previous researchers (Adelmann, 1989; Ashforth and Humphrey, 1993; Hochschild, 1983; Wharton, 1993) have suggested, but rarely tested, variables which may help to predict which work roles will require regulation of emotional expression and what conditions might influence employees' willingness and ability to express sanctioned emotions.

The third objective is to explore the consequences of performing emotional labor on employees' well-being. Previous research has implic-

itly or explicitly concluded that emotional labor has negative and dysfunctional consequences for workers (Adelmann, 1989; Erickson, 1991; Hochschild, 1983). This study suggests the possibility that under certain conditions, performing emotional labor actually leads to favorable attitudinal and role behavior outcomes.

Finally, the article examines the implications of this research for more effective management of emotions during service transactions. The rapid and significant increase in the number of jobs which require regulated displays of emotion, as well as the potential impact of emotional displays on service quality and customer satisfaction, certainly makes this issue one worthy of additional attention.

THEORY

Conceptualization of Emotional Labor

According to Hochschild (1983), jobs involving regulated displays of emotion possess three characteristics: (1) they entail voice or facial contact with the public; (2) they require the worker to produce an emotional state or reaction in the customer; and (3) they provide the employer an opportunity to control the emotional activities of the employee. Displaying organizationally-sanctioned emotions to customers or clients has been argued to be a form of "labor" since it requires effort, planning, anticipation, and adjustment to situational factors in order to publicly display emotions that employees may not necessarily privately feel (James, 1989).

Frequency of Interaction. A categorization of jobs requiring emotional labor provided by Hochschild (1983) established the foundation from which virtually every existing empirical study of emotional labor has since proceeded. The premise here is that external stakeholders (customers or clients) are more likely to comply with organizational goals when the affective bonds of liking, trust, and respect have been established through appropriate employee behavior. Thus, the more a work role requires contact with other people, the greater the organization's need to rely upon regulated displays of emotion to ensure compliance with organizational goals.

Duration of Interaction. While frequency of contact with persons outside the organization or work unit is clearly an important indicator of emotional labor, the second dimension of emotional labor proposed here is duration of interaction. Sutton and Rafaeli's (1988) and Rafaeli's (1989) work with convenience store clerks suggests that short interactions with customers often involve highly scripted interaction formats (e.g., a simple thank you or a slight smile). This finding implies that the planning and level of effort required for interactions of short duration are quite minimal. Conversely, it is reasonable to argue that the longer the duration of an interaction the greater the emotional labor which will be required. Research on job stress and burnout supports this proposition. For instance, Cordes and Dougherty (1993) report that longer interactions with clients are associated with higher levels of burnout.

There are two reasons why duration is an important component of the emotional labor construct. First, longer interactions may become less scripted and therefore require greater attention, effort, and emo-

tional stamina (Hochschild, 1983). Second, as the interaction unfolds, more personal information about the customer or client becomes available. This may make it harder for employees to avoid showing "real" feelings which violate organizational norms (James, 1989).

Emotional Dissonance. Middleton (1989) has defined the conflict between emotions genuinely felt and emotions to be displayed in organizations as "emotional dissonance." Workers may experience emotional dissonance when the emotions required by the organization (e.g., show positive emotion to angry customers) clashes with their inner or "real" feelings (e.g., expressing reciprocal anger). Previous examinations of emotional dissonance have always considered dissonance a consequence of emotional labor (Adelmann, 1989). However, rather than being a consequence, emotional dissonance can and should be considered as the third component of the emotional labor construct itself.

What makes regulation of emotional expression more difficult, and thus more labor intensive, are exactly those very situations in which there are conflicts between genuinely felt emotions and organizationally-sanctioned emotions. In other words, the act of expressing sanctioned emotions during interpersonal transactions (i.e., emotional labor) becomes more demanding when it requires greater effort to control true feelings.

In closing here, it should be noted that other researchers have suggested that intensity of emotion and range of emotions are possibly other dimensions of emotional labor. Because intensity and range of emotions expressed are more appropriately and accurately measured by observational methodologies, they are not being empirically investigated in the present survey research study.

Antecedents of Emotional Labor

To date, there has been little research on the antecedents of emotional labor. Here, we examine four variables which might be highly associated with engaging in emotional labor: the explicitness of display rules, task routineness, job autonomy, and power of the role receiver. These antecedents are discussed, in turn, below and are displayed graphically in Figure I.

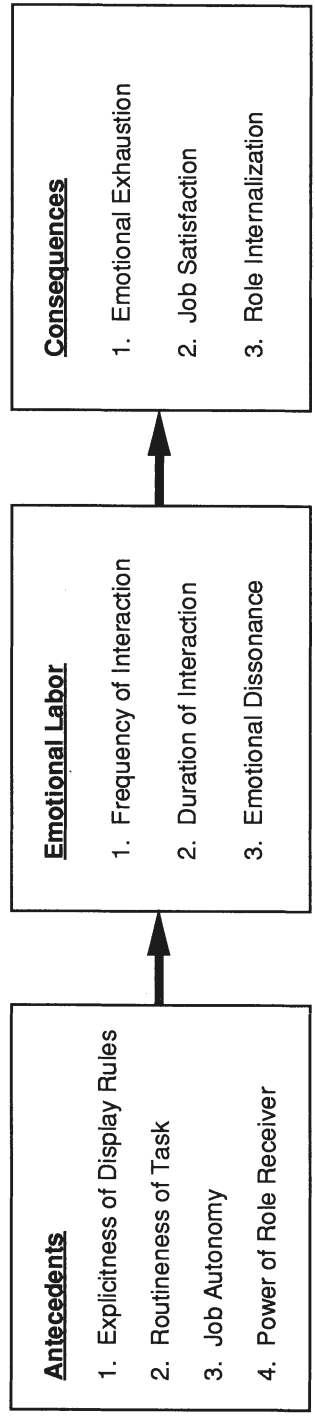
Explicitness of Display Rules. Display rules are learned norms regarding when and how emotion should be expressed in public (Ekman, 1972). Both VanMaanen and Kunda (1989) and Kuenz (1995), for example, report that Walt Disney World uses classes, handbooks, and billboards to teach newcomers exactly which positive and esteem-enhancing emotions they must convey to "guests" at Walt Disney World. In addition, these authors suggest that the more contact employees have with customers and the more an organization believes that the control of employees' emotional behavior will produce organization gains, the more likely the organization will try to control that behavior through explicit display rules. As Hypothesis 1 suggests, then, the more explicit the organizational display rules, the more frequently employees will have to engage in emotional labor.

> **Hypothesis 1:** Explicitness of organizational emotional display rules will be positively associated with frequency of emotional labor.

Task Routineness. Jobs vary widely in terms of routineness, even within the service industries. Sales clerks and

Figure 1

Antecedents and Consequences of Emotional Labor



counter workers at fast food restaurants are two examples of routine service jobs (Leidner, 1989; Rafaeli, 1989). Emotion work for these workers often follows highly scripted formats (Leidner, 1989). What appears to be of utmost importance for many routine service jobs is that the interaction with the customer be done quickly and uniformly. In contrast, the more nonroutine the task, the longer the interactions between service providers and clients are likely to be. Thus, Hypotheses 2 and 3 suggest that task routineness will be positively correlated to frequency of emotional labor, while task routineness will be negatively correlated with duration of emotional labor.

Hypothesis 2: Task routineness will be positively correlated with frequency of emotional labor.

Hypothesis 3: Task routineness will be negatively correlated with duration of emotional labor.

Hypothesis 4 proposes that, in general, task routineness should be positively related to emotional dissonance. Leidner (1989) and Van Maanen and Kunda (1989) found that part-time and summer workers engaged in routine service work often allowed themselves to go "on automatic pilot," thereby experiencing only "emotional numbness." Because no single service transaction was of much importance nor were there any expectations by management or customers to personalize the interaction, there was little, if any, real feeling about the required interactions. However, for full-time, permanent employees engaged in routine service jobs, restricted latitude in how display rules can be enacted, coupled with limited freedom to personalize display rules, creates more emotional dissonance.

Hypothesis 4: Task routineness will be positively correlated with emotional dissonance.

Job Autonomy. Previous emotional labor studies have all found evidence to suggest that emotional labor is significantly less aversive among workers who have greater job autonomy (Adelmann, 1989; Erickson, 1991; Wharton, 1993). Following Rafaeli and Sutton's (1989) lead, Hypothesis 5 suggests that autonomy is an important antecedent of emotional dissonance. Indeed, one of the reasons that emotional labor is, in fact, "labor" is that the employee's regulation of emotional expression is organizationally controlled. Employees who have more autonomy over their expressive behavior should have more latitude to violate organizational display rules when those rules conflict with their own genuinely felt emotions.

Hypothesis 5: The greater the job autonomy the lower emotional dissonance will be.

Power of the Role Receiver. Descriptions of the emotional behavior of service professionals (Hochschild, 1983; Kuenz, 1995; Sutton and Rafaeli, 1988)suggest that the extent to which some types of felt emotions are displayed depends on the status and power of the target. For instance, expressing anger at a subordinate is much more common than anger directed at a supervisor (Kipnis et al., 1980), while displaying anger to a customer at a discount store might be more tolerable than a similar display at a high-end boutique. Power of the role receiver over the role sender, then, is a strong incentive for role senders to express emotions which they do not generally feel.

Subsequently, the greater the power of the role receiver over the

role occupant, the greater the frequency of emotional labor (Hypothesis 6). Moreover, the greater the power of the role receiver over the role occupant, the greater the emotional dissonance (Hypothesis 7).

Hypothesis 6: The greater the power of the role receiver over the role occupant the greater the frequency of emotional labor.

Hypothesis 7: The greater the power of the role receiver over the role occupant the greater the emotional dissonance.

Consequences of Emotional Labor

We argue in this article that the three components of the emotional labor construct will be differentially related to various aspects of psychological well-being. The dimensions of psychological well-being examined here are emotional exhaustion, job satisfaction, and role internalization (cf. Figure I).

Emotional Exhaustion. Emotional exhaustion is a specific stress-related reaction and is considered to be a key component of the burnout process (Maslach, 1982). Emotional exhaustion refers to a state of depleted energy caused by excessive emotional demands made on people interacting with customers or clients (Saxton et al., 1991).

Maslach (1982) reports that occupants of work roles requiring regulation of emotional display during extensive contact with clients are more likely to suffer from emotional exhaustion. Specifically, Maslach (1982) states that frequent face-to-face interactions which are intense, emotionally charged, and of longer duration are associated with higher levels of emotional exhaustion. Thus, a key consequence of emotional labor should be emotional exhaustion. The more individuals have to express organizationally-sanctioned emotions and the longer the duration of those interactions, the more exhausted individuals should be, especially when the emotions required to be expressed are inconsistent with emotions actually felt.

Hypothesis 8: The greater the frequency of emotional labor the greater the emotional exhaustion.

Hypothesis 9: The longer the duration of emotional labor the greater the emotional exhaustion.

Hypothesis 10: The greater the emotional dissonance the greater the emotional exhaustion.

Job Satisfaction. Previous theoretical work on emotional labor would suggest a negative relationship between emotional labor and job satisfaction. However, two empirical tests of this relationship (Adelmann, 1989; Wharton, 1993) did not find a negative relationship. In fact, Wharton (1993) found that high emotional labor was positively related to job satisfaction.

Person-environment fit theory (Caplan, 1983) and the dispositional approach to attitudes (Staw et al., 1986) both suggest the possibility that some employees may not find expression of organizationally-sanctioned emotion particularly unpleasant. As noted earlier, in some cases employees can go on "automatic pilot" and experience only "emotional numbness" during emotional labor (Leidner, 1989). Thus, as Hypothesis 11 suggests, it may not be the frequency or duration of emotional labor which are related to job satisfaction but rather the dissonance experienced between required emotional displays and the employee's true feelings.

Hypothesis 11: The higher the emotional dissonance the lower the job satisfaction.

Role Internalization. Role internalization refers to the extent to which individuals incorporate organizational demands into their true or real identity (O'Reilly and Chatman, 1986). Ashforth and Humphrey (1993) have argued that in work roles requiring emotional labor, there tends to be greater pressure to internalize the role demands. Their logic is based on the premise that failure to internalize organizational display norms will ultimately lead to poor perceived job performance and job loss. Over time, workers will either have to internalize the role demands to survive on the job or leave the organization altogether. Thus, as Hypotheses 12 and 13 suggest, the greater the frequency of emotional labor and the longer the duration of emotional labor the greater the internalization of role demands.

Hypothesis 12: The greater the frequency of emotional labor the greater the internalization of role demands.

Hypothesis 13: The longer the duration of emotional labor the greater the internalization of role demands.

Other outcome variables which have been theoretically linked to emotional labor are marital harmony, anxiety, and performance indices (such as number of customer service complaints and speed of service). For purposes of the present study, marital harmony and anxiety were viewed as too intrusive and personal life-related to be asked on questionnaires distributed through work, while the promises of confidentiality and anonymity mitigated against linking up individuals' survey responses with specific organizational performance data.

METHOD

Data and Procedures

Results were based on 562 questionnaire responses from three groups of respondents (response rate of 38%). The data set included respondents from seven debt collection agencies located in two southern states (N=75; response rate of 50%), members of a military recruiting battalion headquartered in the Southeast (N=75; response rate of 41%), and members of a state nursing association (N=412; response rate of 36%).

Respondents at each of the research sites completed questionnaires on their own and returned them by mail. All respondents participated voluntarily in the study, and assurances of anonymity were made and kept. The sample was 80% female and had an average tenure of 7.6 years; the average hours worked per week was 42.2. The large proportion of females reflects both the larger size of the nursing sample and the dominance of females in the nursing profession.

Measures

The means, standard deviations, and alphas for all scales appear in Table 1.

Emotional Labor. Three items were written to capture the frequency of contact respondents had with others (patients, recruits, or consumers). A sample item was: "I spend most of my work time interacting with patients" (the terms "recruits" and "consumers" were used in the non-nursing samples). Three new items were written to measure duration. A sample item was: "I have to spend a lot of time with each patient I work with." Three Likert items were also used to tap emotional dissonance. An example of a dissonance item is: "Most of the time, the way I act and speak with patients matches how I feel anyway."

TABLE 1

Descriptive Statistics, Reliabilities, and Correlations[1]

	Mean	s.d.	α	1	2	3	4	5	6	7	8	9
1 Explicitness of display rules	3.78	0.72	.77	-								
2 Task routineness	2.92	1.06	.76	.25	-							
3 Job autonomy	3.91	0.72	.68	-.06	-.17	-						
4 Power of role receiver	3.55	1.08	-	.28	.21	-.05	-					
5 Frequency of EL	3.73	0.98	.80	-.04	.10	.01	.03	-				
6 Duration of EL	3.35	1.04	.84	-.16	-.24	.21	-.01	.09	-			
7 Emotional dissonance	2.65	0.89	.79	.04	.19	-.28	.05	-.03	-.10	-		
8 Emotional exhaustion	2.81	0.88	.87	-.02	.21	-.23	.12	-.13	.05	.33	-	
9 Job satisfaction	3.42	0.91	.87	.02	-.23	.34	-.12	.11	-.01	-.37	-.77	-
10 Role internalization	3.75	0.70	.79	.08	-.27	.35	-.06	.04	.11	-.41	-.56	.71

[1]Correlations greater than or equal to .09 are significant at the .05 level; those greater than or equal to .11 are significant at the .01 level; those greater than .14 are significant at the .001 level.

Antecedents of Emotional Labor. Four items were written to measure explicitness of display rules. For example, members of the nursing association were asked how much they agreed or disagreed with the following statement: "The hospital (medical facility) I work at has specific rules about how nurses are supposed to treat patients." The resulting summary score could range from 1 (display rules are not explicit or known) to 5 (display rules are very explicit).

Routineness of task was measured with two items adapted from the task routineness scale of Withey, Daft, and Cooper (1983). Items were reworded to reflect service work; a sample item is "My work with patients is fairly routine." Higher scores indicate service work that is more routine. Job autonomy was measured using Hackman and Oldham's (1975) three-item measure of job autonomy. The power of the role receiver over the role occupant was measured using a single item which read, "For me to be effective in my job, I need the cooperation and goodwill of patients."

Consequences of Emotional Labor. All of the items measuring psychological well-being (outcome variables) were scored on 1 (Strongly Disagree) to 5 (Strongly Agree) Likert-type scales. Emotional exhaustion was closely adapted from Wharton's (1993) six-item measure. A sample item was: "I feel emotionally drained from my work." Job satisfaction was measured by a five-item scale developed by Hackman and Oldham (1975).

Six items were adapted from O'Reilly and Chatman's (1986) measure of organizational commitment and reworded to measure role internalization. A sample item was: "With my job I sometimes have to act in ways that are not completely consistent with my true values." The mean score could range from 1 to 5, with higher scores indicating greater internalization of role expectations.

Analyses

One-way ANOVAS were conducted first to determine if there were significant differences across subsamples due to demographic characteristics or job categories. Results indicated that there were systematic, statistically significant differences due to job category, gender, and job tenure. Because of these systematic differences all subsequent regression equations were run controlling for job category, gender, and tenure.

Since not every antecedent variable was expected to impact each component of emotional labor nor were all of the components of emotional labor expected to influence each of the outcome variables, six separate regression equations were tested. One regression analysis was run for each of the three emotional labor variables with its respective set of predicted antecedent variables; one regression analysis was also run for each of the outcome variables with its respective set of predictors. For each of these six dependent variables, only the hypothesized predictors are entered as independent variables.

RESULTS

Table 2 presents the findings on the antecedents of emotional labor on the frequency of emotional labor, the duration of emotional labor, and emotional dissonance.

As Equation 1 indicates, Hypothesis 1 is not supported. While the relationship was statistically significant

TABLE 2

Results of Regression Analysis: Antecedents[1]

Variables		Equation 1 Frequency		Equation 2 Duration		Equation 3 Dissonance
Control variables						
Job category1		0.560**		-0.833***		-0.298
Job category2		1.043***		-2.211***		0.071
Gender		-0.047		-0.208		-0.256
Tenure		-0.011		-0.010		0.004
Antecedents of emotional labor						
Explicitness of display rules	(H1)	-0.153*				
Task routineness	(H2)	0.094*	(H3)	-0.133***	(H4)	0.082*
Job autonomy					(H5)	-0.346***
Power of role receiver	(H6)	0.084*			(H7)	-0.017
F		9.535***		50.710***		10.054**
R-SQ		0.112		0.321		0.117
Adjusted R-SQ		0.100		0.315		0.106

[1]Statistics are standardized regression coefficients.
*p<.05
**p<.01
***p<.001

(ß=−0.153, p<.05), the direction of the relationship was opposite to that predicted.

Hypothesis 2 states that the more routine the task the more frequent the emotional labor. Hypothesis 2 was supported (ß=0.094, p<.05). As predicted, routine service work is positively associated with increased frequency of emotional labor (cf. Equation 1).

Hypothesis 3 states that the more routine the service work the shorter the duration of emotional labor. Hypothesis 3 was supported (ß=−0.133, p<.001). Routine service work requires shorter interactions (cf. Equation 2).

Hypothesis 4 states that routineness of task will be associated with greater emotional dissonance, while Hypothesis 5 states that greater job autonomy is negatively associated with emotional dissonance. Both Hypothesis 4 (ß=0.082, p<.05), and Hypothesis 5 (ß=−0.346, p<.001) were supported (cf. Equation 3).

Hypothesis 6 was also supported (ß=0.084, p<.05). The greater the perceived power of the role receiver the greater the frequency of emotional labor (cf. Equation 1).

Hypothesis 7 states that the greater the power of the role receiver over the role occupant the greater the emotional dissonance. Hypothesis 7 was not supported (ß=−0.017, n.s.; cf. Equation 3).

Regression results for the equations where facets of emotional labor are the independent variables and emotional exhaustion, job satisfaction, and role internalization are the dependent variables are shown in Table 3.

Hypotheses 8, 9, and 10 state that emotional exhaustion will be higher the greater the frequency (H8), duration (H9), and dissonance (H10) of emotional labor (Equation 1). Hypothesis 8 was not supported (ß=−.050, n.s.). Hypothesis 9 was also not supported (ß=−.005, n.s.). However, Hypothesis 10 was supported (ß=.316, p<.001). The relationship between emotional exhaustion and dissonance is such that the greater the conflict between felt and sanctioned expressed emotion the more emotional exhaustion is experienced.

Equation 2 of Table 3 reports the relationship between emotional dissonance and job satisfaction. Hypothesis 11 states that the greater the emotional dissonance the lower the job satisfaction. Hypothesis 11 is supported (ß=−.376, p<.001). There is a highly significant relationship between the two variables such that the higher the emotional dissonance the lower the job satisfaction.

Equation 3 of Table 3 reports the regression results where role internalization is the dependent variable. Hypothesis 12 states that the greater the frequency of interaction the greater the role internalization. Hypothesis 12 was not supported (ß=−.015, n.s.). Hypothesis 13 states that the longer the duration of emotional labor the greater the role internalization. Hypothesis 13 was supported (ß=.105, p<.01). Increased duration was positively associated with increased acceptance of role demands. Thus, emotional labor of longer duration appears to result in greater internalization of role expectations, while frequency of interaction has no relationship to role internalization.

DISCUSSION

The results in this study suggest that emotional labor can be concep-

TABLE 3

Results of Regression Analysis: Outcomes[1]

Variables		Equation 1 Emotional Exhaustion		Equation 2 Job Satisfaction		Equation 3 Role Internalization
Control						
Job Category1		-0.577***		0.802***		0.573***
Job Category2		-0.829***		0.996***		0.512**
Gender		0.208		-0.256*		-0.227*
Tenure		-0.002		0.012*		0.012**
Frequency of EL	(H8)	-0.050			(H12)	-0.015
Duration of EL	(H9)	0.005			(H13)	0.105**
Emotional dissonance	(H10)	0.316***	(H11)	-0.376***		
F		21.308***		44.553***		16.818***
R-SQ		0.217		0.292		0.159
Adjusted R-SQ		0.207		0.286		0.150

[1]Statistics are standardized regression coefficients.
*p<.05
**p<.01
***p<.001

tualized in terms of three fairly distinct components, and that a more differentiated view of the emotional labor construct may be useful in understanding the antecedents and consequences of emotional labor. Below we explore the implications of the results for future theory development, the methodological limitations of the study, and implications for managers.

Theory Development

The negative relationship between explicitness of display rules and frequency of interaction was unexpected (H1). One possible explanation for this result could be that more senior employees know display rules but hold work roles which require fewer interactions with customers (i.e., supervisory jobs). A positive correlation between job tenure and explicitness of display rules and a negative correlation between job tenure and frequency of emotional labor provides some support for this explanation.

In contrast, the results on the impact of task routineness were consistently supported. Routine service work requires greater frequency, shorter interactions, and results in greater emotional dissonance than nonroutine service work (H2, H3, H4). The inability to personalize a service encounter due to pressures to speed up service work is probably at least partially responsible for the relationship between routineness and emotional dissonance. Limited latitude in how display rules can be enacted may show a lack of respect for one's professionalism and, as a result, pose a significant threat to the valued work role identities of full-time, career-oriented employees (Ashforth and Humphrey, 1993).

The negative relationship between job autonomy and emotional dissonance is an important finding (H5). As predicted, role occupants who had more freedom to decide how and when to express emotion during interactions with stakeholders reported fewer conflicts between felt and sanctioned emotion. In other words, employees who had more control over their work environment were less likely to express emotions which conflicted with felt emotions. This provides strong support for the argument made in this article that one of the reasons organizational control of employee emotional expression was, in fact, "labor" is that it takes greater effort, skill, and control to express sanctioned emotion when these emotions conflict with genuinely felt emotion.

The results on the antecedents of emotional labor also suggest that frequency of emotional labor is increased by the perceived power of the role receiver (H6). This finding supports previous arguments that one of the key reasons organizations require regulated displays of emotion is to ensure compliance with organizational goals. Simply put, those customers who have the power to choose among a number of different organizations may be more likely to utilize the organization's services when employee expression of appropriate emotion has established bonds of liking and trust.

The present study also examined possible consequences of each component of emotional labor on emotional exhaustion, job satisfaction, and role internalization. The results here provide the first direct empirical evidence that previous research has overemphasized the negative aspects of emotional labor. As hypothesized,

only one component of emotional labor—emotional dissonance—is associated with higher emotional exhaustion and lower job satisfaction. Thus, the act of expressing sanctioned emotions as part of the work role appears to be dysfunctional for the individual only to the extent that expressed sanctioned emotion violates felt emotions.

Beyond the results on specific hypotheses, the findings of this study point out several additional avenues of future research on emotional labor which might be worthwhile. First, researchers should devote more attention to the multidimensionality of emotional labor. This study's three dimensional conceptualization of emotional labor captured additional aspects of the planning, control, and skill required to present sanctioned emotions and is an improvement over Hochschild's (1983) dichotomous measure. Dimensions other than frequency, duration, and dissonance may also provide further insights into the emotional labor construct. A partial list of additional components of emotional labor includes intensity of expressed emotion and the range of emotional expressions required by the work role.

Further exploration of the possible consequences of emotional labor is also needed. The findings reported in this study pertain only to emotional exhaustion, job satisfaction, and role internalization. Research on other outcomes, such as marital harmony and anxiety, may yield different results. Examination of the impact of emotional labor on organizational outcomes is especially needed. One of the primary reasons why organizations require emotional labor is the expectation that regulated emotional expression will increase service quality. However, in the only quantitative study of the relationship between emotional labor and sales, Sutton and Rafaeli (1988) found a weak but significant negative relationship between the two variables.

Methodology Limitations

The three-component conceptualization of emotional labor, the empirical findings on the antecedents of emotional labor, and the refocus of research on both the positive and negative consequences of emotional labor all add to our understanding of emotional labor. However, several limitations of the research methodology in the present study can be identified.

Questionnaire assessment of emotional experiences is susceptible to a number of artifacts, such as social desirability effects and response distortion due to ego-defense tendencies (Wallbott and Scherer, 1989). In addition, questionnaire studies also suffer from common method variance problems (Spector, 1987). Future research can avoid this potential source of confounding by collecting data from additional sources as well. For example, direct observation of emotional expression would also be useful in quantifying frequency and duration of emotional labor. An excellent example of this type of data collection can be found in Rafaeli's (1989) study of the emotional expression of store clerks. In addition, while the alphas on the new scales in this research are around .80, it would be preferable to have scales with more than three items.

Future research on emotional labor would also benefit from longitudinal research designs. Firm assessments of antecedents and outcomes

of emotional labor cannot be based on cross-sectional data alone.

Another possible limitation of this study concerns the potential nonrepresentativeness of the sampling. All three occupations included in this study were thought to have high emotional labor requirements. Consequently, the frequency of emotional labor they perform as part of the job may be relatively homogeneous. Future research on emotional labor should sample across a wide variety of occupations to overcome this potential problem. Moreover, it would be helpful in future research if the subgroup samples were more equivalent in size.

Managerial Implications

The results of the study also have important implications for service organizations requiring emotional labor. First, previous research has suggested that jobs which are low on "motivating potential" (e.g., little skill or task variety and/or job autonomy) are associated with fewer positive individual and organizational outcomes (Hackman and Oldham, 1975). The results of this article suggests that organizations can enrich service jobs by allowing more flexibility and greater latitude in how employees display emotions, and in doing so, generate benefits for employees and organizations alike. For example, bank tellers who were allowed to modify organizationally mandated display rules to fit their own interpersonal styles had higher job satisfaction than bank tellers with less autonomy over how they expressed desired emotions to customers (Ashforth and Humphrey, 1993).

The second key implication for managers concerns the finding that it is emotional dissonance which has the most negative impact on psychological well-being. This suggests that recruitment and selection, rather than socialization and reward systems, may be the most effective way for organizations to manage emotion work. In other words, instead of forcing employees to comply with display norms that violate felt emotions, it may be more efficient for organizations to select employees whose expressive style matches display norms.

In discussing how emotion work can be managed, Rafaeli and Sutton (1987) note that few, if any, selection tools currently exist which help predict expressive behavior or ability to display emotions. However, using more realistic recruiting techniques may prove useful (Wanous, 1992). Organizations that make explicit their emotional labor requirements during the selection process can help individuals decide beforehand whether their expressive behavior matches the organization's display rules.

To the extent that emotional expression is dependent upon enduring dispositional factors, there are some individual characteristics which managers should look for in order to make better selection decisions (Kendrick and Funder, 1988). One personality variable which looks especially promising is affectivity. Lazarus (1993) has defined affectivity as a general tendency to react to objects (e.g., jobs, people) in an emotionally consistent way (e.g., to be happy or sad). It may be that employees who have a tendency to experience positive emotions will be better suited for work roles that require the expression of positive emotion (e.g., sales clerks, flight attendants). In contrast, employees who have a tendency to ex-

perience negative emotions may be better suited for work roles that require the expression of negative emotion (e.g., bill collectors, bouncers).

Rafaeli and Sutton (1987) have suggested that selecting employees on the basis of extraversion may also be helpful, since extraverted employees are more likely to act in a friendly and social manner. Further, Kring et al.'s (1994) Emotional Expressivity Scale (EES) may prove useful in helping organizations select employees for work roles requiring extensive emotional labor. Simply put, working on emotional labor from a selection perspective should help organizations better match an employee's expressive behaviors and work role requirements.

Needless to say, any personality-based selection tools such as these must be reliable, valid, and meet EEOC requirements. These measures, to date, have been shown to be reliable and valid indicators of personal style, but data collected *within each organization* are needed to demonstrate their links to actual job performance. Since prior research suggests that females are better at controlling their emotional expression, there is no a prior reason to expect such measures to be discriminatory, at least in terms of gender.

Given the increasing demand for regulated emotional expression and the potentially important consequences of emotional labor, it is crucial that management researchers continue to develop theories and measures which capture the complexities of emotion management as part of work roles. This study provides some theoretical ideas, empirical data, and suggestions for future research to that end.

References

Adelmann, P. K. 1989. *Emotional Labor and Employee Well-being.* Unpublished Dissertation.

Ashforth, B. E., and R. H. Humphrey. 1995. "Emotion in the Workplace: A Reappraisal." *Human Relations* 48: 97-125.

_____, and _____. 1993. "Emotional Labor in Service Roles: The Influence of Identity." *Academy of Management Review* 18: 88-115.

Caplan, R. D. 1983. "Person-environment Fit: Past, Present, and Future." *Stress Research: Issues for the Eighties.* Ed. C. L. Cooper. Ann Arbor, MI: Institute for Social Research. 35-77.

Cordes, C. L., and T. W. Dougherty. 1993. "A Review and Integration of Research on Job Burnout." *Academy of Management Review* 18: 621-656.

Ekman, P. 1972. "Universals and Cultural Differences in Facial Expressions of Emotion." In *Nebraska Symposium on Motivation.* Ed. J. Cole. Lincoln: University of Nebraska Press. 207-293.

Erickson, R. J. 1991. *When Emotion is the Product: Self, Society, and (in) Authenticity in a Postmodern World.* Unpublished Dissertation.

Hackman, J. R., and G. Oldham. 1975. "Development of the Job Diagnostic Survey." Journal of Applied Psychology 60: 159-170.

Hochschild, A. 1983. *The Managed Heart.* Berkeley: University of California.

James, N. 1989. "Emotional Labour: Skill and Work in the Social Regulation of Feelings." *Sociological Review* 37: 15-42.

Kendrick, D. T., and D. Funder. 1988. "Profiting from Controversy: Lessons from the Person-situation Debate." *American Psychologist* 43: 23-34.

Kipnis, D., J. Schmidt and I. Wilkinson. 1980. "Intra-organizational Influence Tactics: Explorations in Getting One's Way. *Journal of Applied Psychology* 65: 440-452.

Kring, A. M., D. Smith, and J. Neale. 1994. "Individual Differences in Dispositional Expressiveness: Development and Validation of the Emotional Expressivity Scale." *Journal of Personality and Social Psychology* 66: 934-949.

Kuenz, J. 1995. "Working at the Rat." In *Inside the Mouse: Work and Play at Disney World.* Eds. S. Fish and F. Jamerson. Durham, NC: Duke University Press. 110-163.

Lazarus, R. S. 1993. "From Psychological Stress to Emotions: A History of Changing Outlooks."*Annual Review of Psychology* 44: 1-21.

Leidner, R. 1989. *Working on People: The Routinization of Interactive Service Work.* Unpublished Dissertation.

Maslach, C. 1982. *Burnout: The Cost of Caring.* Englewood Cliffs, NJ: Prentice-Hall.

Middleton, D. R. 1989. "Emotional Style: The Cultural Ordering of Emotions." *Ethos* 17: 187-201.

O'Reilly, C. III, and J. Chatman. 1986. "Organizational Commitment and Psychological Attachment: The Effects of Compliance, Identification, and Internalization on Pro-Social Behavior." *Journal of Applied Psychology* 71: 492-499.

Rafaeli, A. 1989. "When Clerks Meet Customers: A Test of Variables Related to Emotional Expression on the Job." *Journal of Applied Psychology* 74: 385-393.

_____, and R. Sutton. 1987. "Expression of Emotion as Part of the Work Role." *Academy of Management Review* 12: 23-37.

_____, and _____. 1989. "The Expression of Emotion in Organizational Life." *In Research in Organizational Behavior.* Eds. L.L. Cummings and B. Staw. Greenwich, CT: JAI Press. 1-42.

Saxton, M. J., J. S. Phillips, and R. N. Blakeney. 1991. "Antecedents and Consequences of Emotional Exhaustion in the Airline Reservations Service Sector." *Human Relations* 44: 583-602.

Spector, P. E. 1987. "Method Variance as an Artifact in Self-reported Affect and Perceptions at Work: Myth or Significant Problem?" *Journal of Applied Psychology* 72: 438-443.

Staw, B. M., N. E. Bell, and J. Clausen. 1986. "The Dispositional Approach to Job Attitudes: A Lifetime Longitudinal Test." *Administrative Science Quarterly* 31: 56-77.

Sutton, R. I. 1991. "Maintaining Norms about Expressed Emotions: The Case of Bill Collectors." *Administrative Science Quarterly* 36: 245-268.

_____, and A. Rafaeli. 1988. "Untangling the Relationship Between Displayed Emotions and Organizational Sales. "*Academy of Management Journal* 31: 461-487.

Van Maanen, J., and G. Kunda. 1989. " 'Real Feelings': Emotional Expression and organizational Culture." In *Research in Organizational Behavior.* Eds. L.L. Cummings and B.M. Staw. Greenwich, CT.: JAI Press. 43-103.

Wallbott, H. G., and K. Scherer. 1989. "Assessing Emotion by Questionnaire." In *Emotion: Theory, Research, and Experience.* Eds. R. Plutchik and H. Kellermand. New York: Academic Press. 55-82.

Wanous, J. P. 1992. *Organizational Entry: Recruitment, Selection, Orientation, and Socialization of Newcomers.* Reading, MA: Addison-Wesley.

Wharton, A. S. 1993. "The Affective Consequences of Service Work." *Work and Occupations* 20: 205-232.

———, and R. J. Erickson. 1993. "Managing Emotions on the Job and at Home: Understanding the Consequences of Multiple Emotional Roles." *Academy of Management Review* 18: 485-486.

Withey, M., R. L. Daft, and W. H. Cooper. 1983. "Measures of Perrow's Work Unit Technology: An Empirical Assessment and a New Scale." *Academy of Management Journal* 26: 45-63.

JOURNAL OF MANAGERIAL ISSUES
Vol. XXXII Number 1 Spring 2020

Women In Management And Firm Financial Performance: An Exploratory Study*

Charles B. Shrader
Associate Professor of Management
Iowa State University

Virginia B. Blackburn
Associate Professor of Management
Iowa State University

Paul Iles
Professor of HRD
Liverpool John Moores University

Modern business is clearly conducted in uncertain contexts. Today's firms are faced with ever increasing international competitive pressures, unstable capricious markets, new and complex technologies, and with dramatic changes in society in general. Paramount among these changing contexts is the change in the management composition of firms due to women assuming management positions. The American work force is one of the most ethnically and gender diverse in the world (Cox and Smolinski, 1994). For firms, this diversity affords new opportunities and challenges. According to Nichols (1993), in this decade, women managers will redefine managerial work and will provide firms with opportunities to capitalize on the challenging contexts they face. Zellner (1994) further notes that women are starting new businesses at a rate nearly twice that of men, and are "bringing to the table" skills such as team building and employee development that are very much in tune with today's competitive realities.

Our goal in this study is to provide conceptual arguments and empirically explore the firm-level relation-

* Address correspondence to: Charles B. Shrader, College of Business, Department of Management, 318 Carver Hall, Iowa State University, Ames, Iowa 50011, USA. This research was supported in part by the Murray G. Bacon Center for Ethics in Business. The authors express appreciation to Roy Teas of Iowa State University, Holly Brower of Purdue University, and to the two anonymous reviewers whose suggestions resulted in substantial improvements in the article.

ships of women in management with financial performance outcomes. To this date, few studies have been directly concerned with firm-level financial performance issues. We will justify and build on the assumption that firms employing more women managers have probably done a better job of recruiting capable managers from the total available talent pool, and consequently will be in a better position to link with customers, employees, and other constituencies. Firms employing higher percentages of women are likely to perform better inasmuch as they are more progressive and more competitive because their management contingents more closely mirror the composition of existing markets.

EXPLANATORY FRAMEWORK

Rationale for these arguments is found in the "resource-based" theory of competitive advantage and strategy analysis (e.g., Barney, 1991, 1997; Grant, 1991). Basically, according to Barney (1997), resource-based theory argues that it is not industry structure that leads to competitive advantage and better performance. Rather, it is the ability to capitalize on and apply the firm's internal resources in uncertain and dynamic industry contexts. The theory proposes that firms are defined as sets or "bundles" of resources. Firms can develop strong competitive advantages by accumulating unique or difficult to duplicate bundles of resources, and these resources can allow firms to take advantage of environmental opportunities or counterbalance threats. Supportive of the theory, research by Robins and Wiersema (1995) indicated that the ability to build these advantages paid off in terms of return on investment.

Barney goes on to say that human capital resources are key to competitive advantage. Employee and management capabilities are firm-level resources that are among the most sustainable and difficult for competitors to imitate. The notion of human resources being the key to competitive advantage is prominent in the current popular management literature. For example, writing of their collective experience with numerous company change efforts, Katzenbach et al. (1995) concluded that many firms have underutilized human resources in this modern era of international competition and organization change. The underutilized resources tend to include females and those of diverse racial and ethnic backgrounds who might otherwise bring different perspectives to the firm. By better utilizing the contributions of women and minorities, firms can become more creative and accepting of change. Katzenbach et al. contend that if fully tapped, it is this cadre of middle-level, diverse, change-oriented managers that sets the high performing firms apart from the others. Iles and Auluck (1993) found that diverse work forces were beneficial to firms because they facilitated team problem solving and synergy. The ability to manage diversity fostered the incorporation of various perspectives into organizational decision making, and firms that united a wider range of participants performed well.

Further evidence that women have been underutilized is found in the works of Jelinek and Adler (1988) and Rosener (1995). Jelinek and Adler (1988) studied the achievements of female expatriates in the context

of their being "nontraditional" managers. They interviewed managers sent by North American firms to foreign assignments and found that females were very successful at developing good interpersonal relations and cooperative alliances with their foreign counterparts. Rosener (1995) argues that women managers can actually enhance the firm's capabilities to be flexible and deal with ambiguity. She goes on to say that the underutilization of women in management in a period of great change and uncertainty is a national economic problem. It stands to reason then that firms employing large percentages of women can gain financially. Rosener puts forth the argument that firms must seriously consider human resource management to be the major determinant of global competitiveness, and that firms fully utilizing the diverse talents of women managers stand to gain competitive advantages over those that do not. Another recent work by Hamel and Prahalad (1994) is based on the resource based notion that the use and development of unique resources in relation to competitors is the key to competitive advantage. Firms that are expert at leveraging, or getting the most out of their set of unique resources, compete better in their industries, and human resources obviously play a major role in this process.

Our contention is that firms employing a greater percentage of women managers have, according to resource-based theory, been successful at acquiring a significant bundle of difficult to obtain resources. Empirical evidence supports this line of reasoning by showing that women make at least as good, if not better, managers than men (Rizzo and Mendez, 1988; Schwartz, 1989; Powell, 1990; Flynn, 1994). There is also some evidence that firms employing more women managers actually perform better financially (Blackburn et al., 1994; Throup, 1994) and that firms with heterogeneous management teams are better able to facilitate strategic change (Wiersema and Bantel, 1992). In this study, we will explore the relationship of women in management with firm financial performance for a sample of very large U.S. firms. Archival data are available for these firms in terms of numbers, rankings, and percentages of women in management, as well as for financial performance. We feel that resource-based theory provides a solid backdrop for this investigation. Because women managers comprise a growing, and perhaps heretofore somewhat neglected resource for firms, we feel that we can now logically test for women in management and performance relationships.

HYPOTHESES ON WOMEN IN MANAGEMENT AND FINANCIAL PERFORMANCE

Percentage of Women in Management

Firms have increased the percentage of women in all management positions over the last decade (Gregory and Kleiner, 1991; Shenhav, 1992; Eisman, 1993; Fagenson, 1993). Yet it is clear that women have been underutilized in management positions (Katzenbach et al., 1995; Rosener, 1995). Because of this underutilization, firms are foregoing the opportunity to fully tap into their human resources. Thus, we argue that firms utilizing these human resources will perform well. Specifically, firms with large percentages of women in man-

agement are taking better advantage of the total pool of managerial resources and will be more likely to perform well financially (Blackburn et al., 1994; Rosener, 1995). We assume managerial talent to be distributed normally among women and men (Rizzo and Mendez, 1988; Powell, 1990).

Support for our case is found in the works of Cox and Blake (1991) and Powell (1990). Cox and Blake view the employment of women in management as a resource acquisition issue. They observe that as women and minority managers proportionally increase in representation in the labor pool, firms will need to be able to compete to hire the best talent. Some firms, such as Merck and Hewlett-Packard have gained reputations for being excellent places for women to work and advance. Cox and Taylor argue that because of these firms' reputations, their abilities to acquire managerial resources are correspondingly magnified, and their competitive abilities are enhanced. Likewise, Powell notes that because of increasing involvement in the management of firms, women managers will have an important impact on organization performance. As a result, we expect firms which have large numbers of women managers to perform well financially.

The fundamental logic for our contention lies in the skills women bring to managerial positions. There is evidence that women are more oriented toward supporting and maintaining relationships than men (Hisrich and Brush, 1994; Rosener, 1995). Women are also strong in the areas of idea generation and innovation, and are generally more satisfied with their jobs than men (Rosener, 1995). Therefore, as more and more women assume management positions, organizational learning, climate, and performance should improve. Consequently, we offer the following hypotheses:

Hypothesis 1: The percentage of women in management is related positively to firm financial performance.

Women in Top Management

It appears that while women have made strides into the managerial ranks, the very top positions are still the bastion of men. The glass ceiling report indicates that men believe that the careers of women are too easily diverted from top management because of family concerns and because women are not "tough" enough (U.S Department of Labor, 1994). The report also claims that a major obstacle is that men are simply not comfortable with women in top management positions. This is consistent with a survey published by Fisher (1992) and with recent work by Bily and Manoocherhri (1995). Additionally, Marsh (1991) and Sharpe (1994) report that the number of women Fortune 500 chief executives is very low and has not changed much over the last decade. It is estimated that only three percent of the top managers in the top 1000 firms in the U.S. are women (Fagenson, 1993; Bily and Manoocherhri, 1995; Rosener, 1995).

There is little research dealing with woman as top managers. We feel that women top managers will have a positive impact on firms for the same reasons as noted for hypothesis 1. Moreover, we suggest that management skill is even more critical at the higher organizational levels. In this vein, Rosener (1995) suggests that women top managers may give their firms' the edge in terms of overall management

process and agenda setting. She states that women are good at seeing the big picture issues and can have a strong impact as top managers on productivity, morale, and profits. Kalleberg and Leicht (1991) found that small firms led by women were more oriented toward quality strategies and were equally as successful as those led by males. Therefore, we argue that, even though women are underrepresented in top management positions, firms that have recruited a greater number of women on the top management team should perform well.

Hypothesis 2: The percentage of women in top management is related positively to firm financial performance.

Percentage of Women on the Board of Directors

Relatively little is known about boards in general and about women on boards in particular. Yet the board should play a critical role in monitoring management and in providing strategic direction for the firm. Active board members help firms gain access to important resources (Shrader et al., 1991). And, as previously stated, women in management may serve to link the firm with stakeholder groups. Research on board composition indicates that women, regardless of qualifications, are favored over men for public affairs board committee positions in firms (Kesner, 1988; Bilimoria and Piderit, 1994). Kesner found in a study of 250 large firms that women directors came from more diverse backgrounds and from outside the company more often than men. Bilimoria and Piderit sampled 175 women and 3,940 men directors in 133 large firms and found that men were favored for membership on board committees considered central to firm governance such as the finance, executive, and compensation committees. Women were more often associated with "soft" board committee assignments and with noncorporate boards. The study concluded that women directors on average sat on as many boards and were better qualified than their male counterparts. Bilimoria and Piderit noted, however, that gender bias against women still exists in the boardroom.

Rosener (1995) argues that both business firms and not-for-profit organizations should consider placing more women on their boards because of their managerial skills. One female board member, Rosener says, is often dismissed as a token. Two females are not enough to be taken seriously. But three gives the board a critical mass and the benefit of the womens' talents. Kesner (1988) found that because of the likelihood of their being outsiders, women have a great deal to offer boards. Thus, it stands to reason that boards with high percentages of female members will be well positioned in their environments and will, therefore, perform well.

Hypothesis 3: The percentage of women on the board of directors is related positively to firm financial performance.

METHODS

Sample

Data on women in management were obtained from a set of articles published in the *Wall Street Journal* by Sharpe (1994) and Foldessy (1994). The articles presented data on women in management obtained from reports made by the 200 US firms with the largest market value, in compliance with Equal Employment Opportunity Commission (EEOC) guidelines. Firms with 100 or more

employees must file with the EEOC reports indicating the number of employees by type of job, race, and gender. According to Sharpe and Foldessy, the EEOC classification "manager" refers to any manager or official. This included positions ranging from supervisor to Chief Executive Officer of the firm. The *Wall Street Journal* authors obtained these reports from the EEOC on computer tape and published the number and percentage of women in management for the 200 firms. For the firms included in the survey, approximately one-fourth (23.68%) of the jobs classified as "manager" were occupied by women.

Women in Management Measures

Data on total women managers and percentage of women in management were reported by the *Wall Street Journal* for each of the 200 firms for 1992. We added to the *Wall Street Journal* data the number and percentage of women in top management and women on the board of directors for the firms in the sample. The *Wall Street Journal* percentage is a ratio based on all the management positions in the firm. We felt that it was also important to identify members of the top management team and members of the board of directors who were female. These groups are considered to be substantively different from the general management/supervisory category of the *Wall Street Journal.* We obtained the top management and board data from the Compact Disclosure database (1990-92). This database listed the top management team and the board of directors by name for each firm. Top managers listed in the database were those that appeared in the 1992 annual reports including the chief executive officer, and the senior vice presidents and officers of the company. We examined the list of names in an attempt to identify those that were feminine. The result was a simple number of females as a percentage of the total reported by the firm. Our list of female top managers and board members was checked with the *Corporate Yellow Book* (1993) leadership directory in an attempt to get as accurate an estimate as possible. Therefore, the number and percentages of women top managers and women board members are estimates based on these firm level data.

All the firms in the sample are considered to be large in terms of assets, employees, and revenues. However, these firms vary in the relative sizes of their top management teams and total number of managers. Consequently, we developed measures for the total number of managers, total number on the top management team, and total number on the board of directors from the data sets. These measures were included because they allowed us to partially control for firm size effects in the analysis. Accordingly, the percentage of women managers measure is defined relative to the total number of managers; the women in top management measure is relative to the total number of top managers; and the percentage of women on the board is relative to the total number on the board as reported by firms. Thus, an attempt was made to control for size and management level.

The average percentage of women in management in 1992 for the 200 firms was 23.68%. The 1992 percentages of women in top management and board positions was much smaller at 4.59% and 8.04%, respec-

tively. Our figure for top management (4.59%) corresponds well with the research of Bilimoria and Piderit (1994) whose sample produced a figure of 4.4%. The percentage of women in management ranged from a low of 2.6% to a high of 66.1%, while the top management percentage range was only from .0% to 27.3%. Thus, the difference between the percentage of women in management/supervisory positions and the percentage in top positions was quite great. Women did not represent a proportionate number of managers at the top levels for the large firms in this sample. It should also be noted that we did not find a single female chief executive among the 200 firms. The average board was 8% female or approximately one female member per board. The average firm had a total of 4,637 managers, 19 top managers, and 13 board members. Firms varied a great deal in the total number of managers.

Financial Performance Measures

Financial measures of firm profitability were obtained from the Compact Disclosure database. Corresponding to the list of firms in the *Wall Street Journal*, we collected data on firm financial performance for 1992 and 1993. The dependent financial performance measures chosen were net income divided by net sales (profit margin, return on sales or ROS), net income divided by total assets (commonly referred to as return on assets or ROA), net income divided by invested capital (return on income or ROI), and net income divided by common equity (return on equity or ROE). We chose these net income or profitability ratios because they are among the most commonly used to indicate the firm's earnings and returns to shareholders, and they convey a basic sense of the overall profitability of the firms. We chose to measure ROS because it is ultimately an indicator of the firm's competitive advantage and resource/competitive flexibility (Hill and Jones, 1995). ROA, ROI, and ROE were chosen by reason that they measure the return on the value of the stockholder's investment and, therefore, worked well with the *Wall Street Journal*'s criterion for including the 200 firms based on their market value. Performance measures for 1992 and 1993 were included because we felt that these were the most relevant time periods in terms of logically making a link between the 1992 percentage of women managers and performance.

There are three independent variables (percentage of women in management, percentage of women on the top management team, and percentage of women on the board), three control variables (total number of managers, total number of top managers, and total number of board members), and four dependent measures at two points in time (net income/net sales or ROS, net income/total assets or ROA, net income/invested capital or ROI, and net income/common equity or ROE) examined in this study. Hierarchical regression is the statistical technique used to test the hypothesized relationships (hypotheses 1-3). Hierarchical regression is chosen because it allows for the test of hypothesized relationships while explicitly controlling for the size variables.

RESULTS

A correlation matrix with means and standard deviations is given for

the variables used in this study in Table 1. One notable statistic is the high variance among firms in the total number of managers. One possible explanation for this is that it is likely that some of these firms had "downsized," and basic middle-level and supervisory managers were most affected. The intercorrelations among the variables are not high with the exception of the financial performance measures which should be expected. Intercorrelations among most of the performance variables range from approximately .23 to .92. The exception is the 1993 ROE measure which has very low intercorrelations with the other performance measures. The other intercorrelations are .26 and below.

To test the hypotheses, the measures of women in management were examined relative to the four financial performance measures. Results of the hierarchical regressions are given in Tables 2-9. Table 2 reports the results of the 1992 ROS estimate which explains approximately 14% of the profit margin variable. The results of the hierarchical F-test indicates that the percentage of women in management variables contribute significantly to the explained variance of the ROS performance variable ($F = 6.57$, $p < .01$). Tables 3-5 report the hierarchical regression results for 1992 ROA, ROI, and ROE, respectively. The incremental F-tests for the other three financial performance variables are also all significant, indicating a strong predictive contribution of the three percentage of women in management variables in explaining performance. Consequently, it is appropriate to interpret the 1992 standardized regression coefficients estimated in the second equations of each table.

The regressions for the 1993 performance variables do not produce as clear results. None of the incremental F-tests are significant and the amount of explained variance is very small in all four cases. Contrary to the three hypotheses, percentage of women managers, percentage of top women managers, and percentage of women board members in general are not found to be significant predictors of the 1993 performance variables.

In examining specific independent variables, the percentage of women in management variable exhibits a clear pattern of findings in the regressions. It is related positively to all four 1992 financial performance measures. The standardized regression coefficients for percentage of women managers are all at significant levels and are in the direction hypothesized—ROS (.23, $p<.001$), ROA (.14, $p< .05$), ROI (.14, $p< .05$), and ROE (.18, $p< .01$) with regard to the 1992 dependent measures. Thus, for 1992 the percentage of women managers is an excellent predictor of firm profitability. For 1993, however, the only significant standardized coefficient is for ROS (.15, $p <.05$). This is in the direction hypothesized, but caution should be used in interpreting this finding because the overall estimate is weak. For the other nonsignificant 1993 coefficients, two are positive and one is negative. Therefore, there is mixed support for hypothesis 1.

The findings with regard to the percentage of women in top management and the test of hypothesis 2 indicate a different pattern altogether. There are no significant positive coefficients for the percentage of women in top management and financial performance relationships. In fact, the coefficients are either

Table 1
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS

	$\bar{X}$	S.D.	% Women Mgrs.	% Women Top Mgrs.	% Women on Board	Total Mgrs.	Total Top Mgrs.	Total on Board	ROS 1992	ROA 1992	ROI 1992	ROE 1992	ROS 1993	ROA 1993	ROI 1993
Percent Women Managers	23.68	14.50													
Percent Women Top Managers	4.53	5.80	.15												
Percent Women on Board	8.04	5.83	.04	.25											
Total Managers	4,636.79	5,441.34	.06	.13	.05										
Total Top Managers	18.92	10.35	-.09	.10	.03	-.06									
Total on Board	13.46	3.42	.17	.01	.04	.01	.20								
ROS 1992	.06	.08	.18	-.13	-.15	.12	-.21	-.11							
ROA 1992	.04	.07	.04	-.06	-.17	.10	-.01	-.26	.77						
ROI 1992	.06	.28	.13	.03	-.12	.10	-.20	-.13	.54	.55					
ROE 1992	.08	.35	.16	-.01	-.11	.13	-.20	-.08	.60	.56	.92				
ROS 1993	.07	.08	.13	-.04	-.06	.06	-.17	-.11	.58	.43	.23	.22			
ROA 1993	.05	.07	-.04	-.01	-.12	.02	.00	-.28	.48	.73	.30	.29	.71		
ROI 1993	.08	.14	.06	-.01	-.07	.05	-.03	-.15	.43	.57	.26	.27	.78	.92	
ROE 1993	.17	.38	-.07	.01	.08	.13	-.05	-.10	.07	.10	.00	-.02	.31	.30	.34

Table 2
HIERARCHICAL REGRESSION SUMMARY
1992 ROS ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.12	1.760	.13	1.862
Total Top Managers	-.19	-2.695	-.15	-2.077
Total on Board	-.08	-1.073	-.12	-1.669
Percent Women Managers			.23	3.305[a]
Percent Women Top Managers			-.12	-1.649
Percent Women on Board			-.12	-1.666
Cumulative R^2	.067		.142	
F-Value	4.587[b]		5.193[c]	
Degrees of Freedom	3/191		6/188	
Incremental R^2			.075	
F-Value			6.57[b]	
Degrees of Freedom			3/188	

[a] $p < .001$ for a one-tail *t*-test.
[b] $p < .01$ for an *F*-test.
[c] $p < .001$ for an *F*-test.

Note: The test of statistical significance of the contribution of variables explaining the variance of the dependent variable is the following *F*-test:

$$F = \frac{(R_1^2 - (R_2^2) \div (k_1 - k_2)}{(1 - R_1^2) \div (N - k_1 - 1)}$$

where R_1^2 and R_2^2 are the coefficients of determination for the regression equations with the larger and smaller number of predictor variables, respectively, k_1 and k_2 are the degrees of freedom for the larger and smaller equations, respectively, and *N* equals the number of observations (Teas, 1981).

quite small or they are negative. As a result, there is no support for hypothesis 2.

Percentage of women on the board also decreases performance. The coefficients for the 1992 performance estimates (ROS, −.12; ROA, −.14; ROI, −.13; and ROE, −.10) are in the opposite direction hypothesized. The same pattern holds, for the most part, for 1993 performance. Only one of the 1993 coefficients is positive but it is small (ROE, .09). Hypothesis 3, therefore, is not supported.

DISCUSSION AND CONCLUSIONS

This study explored the relationships among various measures of women in management and firm financial performance. Drawing from the resource-based theory of competitive advantage we hypothesized that

Table 3
HIERARCHICAL REGRESSION SUMMARY
1992 ROA ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.14	1.972	.14	2.065
Total Top Managers	.04	.53	.07	.961
Total on Board	-.28	-3.99	-.30	-4.242
Percent Women Managers			.14	2.039[a]
Percent Women Top Managers			-.07	-.926
Percent Women on Board			-.14	-2.016
Cumulative R^2	.094		.137	
F-Value	6.649[c]		5.045[c]	
Degrees of Freedom	3/193		6/190	
Incremental R^2			.043	
F-Value			2.956[b]	
Degrees of Freedom			3/190	

[a] $p < .05$ for a one-tail *t*-test.
[b] $p < .05$ for an *F*-test.
[c] $p < .001$ for an *F*-test.

firms utilizing high percentages of women at all managerial levels would perform well. Our results, however, denote mixed relations among measures of women in management and firm financial performance. Most supportive of the theory are the relations among the percentage of women managers and the financial profitability measures. It appears in general that large firms with high percentages of women managers also have high ROS, ROA, ROI, and ROE. This clearly coincides with the resource-based theory of competitive advantage. While it could be argued that, given these findings, women in general do make better managers, it seems more prudent to state that firms that have utilized more of these resources are reaping the benefits. Indeed, these findings are in harmony with the recent arguments of Rosener (1995) and Katzenbach et al. (1995) who contend that women and middle managers hold the keys to better firm performance.

We did not find that higher percentages of women managers on the top management team or on the board of directors were disproportionately associated with higher financial performance. An apparent explanation for the top management finding is that there simply are very few women top managers. In our study females made up only 4.5% of the top management teams and there were no female chief executives.

With respect to the board, these findings are consistent with those of Bilimoria and Piderit (1994). One

Table 4
HIERARCHICAL REGRESSION SUMMARY
1992 ROI ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.11	1.521	.10	1.390
Total Top Managers	-.18	2.472	-.16	-2.234
Total on Board	-.09	-1.309	-.12	-1.609
Percent Women Managers			.14	1.987[a]
Percent Women Top Managers			.05	.662
Percent Women on Board			-.13	-1.829
Cumulative R^2	.061		.097	
F-Value	4.119[c]		3.363[c]	
Degrees of Freedom	3/191		6/188	
Incremental R^2			.036	
F-Value			2.500[b]	
Degrees of Freedom			3/188	

[a] $p < .05$ for a one-tail *t*-test.
[b] $p < .10$ for an *F*-test.
[c] $p < .01$ for an *F*-test.

possible reason for the board of director findings may be as Bilimoria and Piderit suggest, that women directors are somewhat disadvantaged by the type of board committee assignments they are traditionally given. Women tend to be given assignments that have less instrumental impact for the firm. Another explanation is, as Rosener (1995) argues, that there is not enough of a "critical mass" of females at the top management levels to have much of an impact on the firm. Given that there is on average only one female per board in our study this seems like a plausible explanation. In this same vein, it is likely that women have not been in top management and board positions long enough to have much impact. Future research efforts examining firms with higher percentages of female directors, who have average tenure compared with their male counterparts, should be undertaken to clarify this notion.

We attempted to control for firm size in our study. For each major independent variable of women in management we also considered its aggregate firm-level counterpart. We not only examined the percentage of women in management with financial performance, but we included the total number of managers as well. The total number of top managers and board members were also included in the analysis with the percentage of women measures.

The sample of firms examined in this study is homogeneous with respect to firm size. The very large U.S.

Table 5
HIERARCHICAL REGRESSION SUMMARY
1992 ROE ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.13	1.894	.12	1.766
Total Top Managers	-.18	-2.567	-.16	-2.224
Total on Board	-.03	-.391	-.06	-.802
Percent Women Managers			.18	2.443[a]
Percent Women Top Managers			.02	.266
Percent Women on Board			-.10	-1.429
Cumulative R^2	.058		.096	
F-Value	3.914[c]		3.346[c]	
Degrees of Freedom	3/192		6/189	
Incremental R^2			.038	
F-Value			2.646[b]	
Degrees of Freedom			3/189	

[a] $p < .01$ for a one-tail *t*-test.
[b] $p < .05$ for an *F*-test.
[c] $p < .01$ for an *F*-test.

firms examined here are among the highest market value firms in the world. Moreover, because of the variety of businesses represented our results should be applicable to large firms across industries. Consequently, future research should attempt to replicate this study in small and mid-sized firms.

As with most research efforts, this study has several weaknesses. First, and perhaps foremost, is that we do not know the exact levels or nature of the managerial positions captured in the *Wall Street Journal* data. We also had no way to assess the extent of each firm's compliance with EEOC guidelines. We only know generally what was reported to the EEOC. Future efforts may try to replicate this research by more carefully examining managerial levels and legal compliance.

We have made some rather utilitarian assumptions by examining the relationship of gender with financial performance. Future research also should consider nonfinancial firm-level performance indicators. By examining other indicators, the complete impact of gender on all relevant corporate stakeholders could be examined.

We also emphasize the exploratory nature of this study. Our results are based on somewhat of a snapshot in time for some relatively complex firm-level phenomena, and are drawn from archival data sets. The long-term effects of women managers on performance need to be examined in much more detail. Therefore,

Table 6
HIERARCHICAL REGRESSION SUMMARY
1993 ROS ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.05	.650	.05	.668
Total Top Managers	-.15	-2.049	-.13	-1.699
Total on Board	-.08	-1.107	-.11	-1.451
Percent Women Managers			.15	1.958[a]
Percent Women Top Managers			-.04	-.573
Percent Women on Board			-.05	-.621
Cumulative R^2	.038		.061	
F-Value	2.407[b]		1.947[b]	
Degrees of Freedom	3/183		6/180	
Incremental R^2			.023	
F-Value			1.480	
Degrees of Freedom			3/180	

[a] $p < .05$ for a one-tail *t*-test.
[b] $p < .10$ for an *F*-test.

changes in percentages and performance measures over time should be considered in future studies.

The amount of confidence we can place in findings based on this sample of firms must be questioned. These firms are very large and well known, and should be at the forefront of business practice. However, using a sample of large firms does not necessarily allow for the control of growth and turbulence that may characterize some industries. In addition, some of these firms may be in the process of restructuring or may have undergone other significant changes which may have affected firm performance as well. As a case in point, we found a large standard deviation for the measure of "total managers." This large deviation could be the result of restructuring, and that some firms have perhaps reduced managerial staff a great deal and some have not. An avenue for future research would be to consider gender balance issues in light of environmental and industry context.

The implications of this research for practicing managers are clear. The results indicate that having a high percentage of women managers pays off. Consequently, firms should freely consider using greater numbers of talented women managers. Staffing policies for managerial positions should be created and implemented to be more receptive to the contributions of females. Training programs to help managers identify and overcome gender bias should be developed. The results also point to the importance of not overmanaging regardless of gender issues.

Table 7
HIERARCHICAL REGRESSION SUMMARY
1993 ROA ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.02	.308	.03	.353
Total Top Managers	.05	.701	.06	.741
Total on Board	-.29	-4.012	-.29	-3.909
Percent Women Managers			.02	.261
Percent Women Top Managers			-.01	.111
Percent Women on Board			-.11	-1.479
Cumulative R^2	.081		.093	
F-Value	5.385[a]		3.066[a]	
Degrees of Freedom	3/183		6/180	
Incremental R^2			.012	
F-Value			.800	
Degrees of Freedom			3/180	

[a] $p < .01$ for an *F*-test.

Table 8
HIERARCHICAL REGRESSION SUMMARY
1993 ROI ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.03	.403	.03	.406
Total Top Managers	.00	.001	.02	.194
Total on Board	-.15	-1.941	-.16	-2.105
Percent Women Managers			.09	1.235
Percent Women Top Managers			-.01	-.164
Percent Women on Board			-.06	-.836
Cumulative R^2	.022		.038	
F-Value	1.359		1.053	
Degrees of Freedom	3/183		6/180	
Incremental R^2			.016	
F-Value			1.000	
Degrees of Freedom			3/180	

Table 9
HIERARCHICAL REGRESSION SUMMARY
1993 ROE ESTIMATE

	Equation 1		*Equation 2*	
	Standardized Regression Coefficients		Standardized Regression Coefficients	
Explanatory Variables	*(β)*	*t*	*(β)*	*t*
Total Managers	.05	.642	.05	.610
Total Top Managers	-.02	-.324	-.03	-.435
Total on Board	-.10	-1.309	-.09	-1.180
Percent Women Managers			-.06	-.741
Percent Women Top Managers			-.00	-.003
Percent Women on Board			.09	1.132
Cumulative R^2	.013		.024	
F-Value	.833		.723	
Degrees of Freedom	3/183		6/180	
Incremental R^2			.011	
F-Value			.685	
Degrees of Freedom			3/180	

Even more significant are the implications for governmental policy makers. This is evidence that the EEOC guidelines may be paying off for firms. In an era where there is considerable debate over the merits of diversity programs and affirmative action, this study's findings suggest that these programs should be very seriously examined before they are discontinued.

References

Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17: 99-120.

_____. 1997. *Gaining and Sustaining Competitive Advantage.* Addison Wesley: Reading, Massachusetts.

Bilimoria, D., and S. K. Piderit. 1994. "Board Committee Membership: Effects of Sex-Based Bias." *Academy of Management Journal* 37: 1453-1477.

Bily, S., and G. Manoocherhri. 1995. "Breaking the Glass Ceiling." *American Business Review* 13 (June): 33-40.

Blackburn, V. L., B, M. Doran, and C. B. Shrader. 1994. "Investigating the Dimensions of Social Responsibility and the Consequences for Corporate Financial Performance." *Journal of Managerial Issues* 6 (Summer): 195-212.

Corporate Yellow Book. 1993. New York: Leadership Directories Inc. (Spring).

Cox, T. H., and S. Blake. 1991. "Managing Cultural Diversity: Implications for Organizational Competitiveness." *Academy of Management Executive* 5: 45-56.

Cox, T., and C. Smolinski. 1994. "Managing Diversity and Glass Ceiling Initiatives as National Economic Imperatives." *U. S. Department of Labor Glass Ceiling Commission Report* (January): 1.

Eisman, R. 1993. "Women at Work." *Incentive* 167 (June): 48-54.

Fagenson, E. A. (ed.) 1993. *Women in Management: Trends, Issues, and Challenges in Managerial Diversity.* Sage Publications, Newbury Park, California.

Fisher, A. B. 1992. "When Will Women Get to the Top?" *Fortune* 125 (September 21): 44-56.

Flynn, G. 1994. "Women Managers Rate Higher Than Male Counterparts." *Personnel Journal* 73: 17.

Foldessy, E. P. 1994. "Percentage of Women Managers at 200 Large Companies in 1992." *Wall Street Journal* (March 29): A8.

Grant, R. M. 1991. "The Resource-based Theory of Competitive Advantage: Implications for Strategy Formulation." *California Management Review* 33: 114-135.

Gregory, S. L., and B. H. Kleiner. 1991. "Women in Business: Fast Track Derailment." *Equal Opportunities International* 10: 1-4.

Hamel, G., and C. K. Prahalad. 1994. Competing for the Future: Breakthrough Strategies for Seizing Control of Your Industry and Creating the Markets of Tomorrow. Harvard Business School Press: Boston.

Hill, C. W. L., and G. R. Jones. 1995. *Strategic Management: An Integrated Approach.* Houghton Mifflin Company: Boston.

Hisrich, R. D., and C. Brush. 1994. "The Woman Entrepreneur: Management Skills and Business Problems." *Journal of Small Business Management* 32 (January): 30-37.

Iles, P., and R. Auluck. 1993. "Developing Managers and Organisations to Manage and Value Differences." Paper presented to the 8th International Organisation Development Association World Congress, Cape Town, South Africa, October.

Jelinek, M., and N. J. Adler. 1988. "Women: World-Class Managers for Global Competition." *The Academy of Management EXECUTIVE* 2: 11-19.

Kalleberg, A. L., and K. T. Leicht. 1991. "Gender and Organizational Performance: Determinants of Small Business Survival and Success." *Academy of Management Journal* 34: 136-161.

Katzenbach, J. R., F. Beckett, S. Dichter, M. Feigen, C. Gagnon, Q. Hope, and T. Ling. 1995. *Real Change Leaders: How You can Create Growth and High Performance at Your Company.* Times Books, Random House: New York.

Kesner, I. F. 1988. "Directors' Characteristics and Committee Membership: An Investigation of Type, Occupation, Tenure, and Gender." *Academy of Management Journal* 31: 66-84.

Marsh, B. 1991. "Women in the Work Force." *Wall Street Journal* (October 18): B3.

Nichols, N. A. 1993. "Whatever Happened to Rosie the Riveter?" *Harvard Business Review* 71 (July/August): 54-62.

Powell, G. N. 1990. "Do Female and Male Managers Differ?" *Academy of Management Executive* 4: 68-75.

Rizzo, A., and C. Mendez. 1988. "Making Things Happen in Organizations: Does Gender Make a Difference?" *Public Personnel Management* 17: 9-20.

Robins, J., and M. F. Wiersema. 1995. "A Resource-based Approach to the Multibusiness Firm: Empirical Analysis of Portfolio Interrelationships and Corporate Financial Performance." *Strategic Management Journal* 16: 277-299.

Rosener, J. B. 1995. *America's Competitive Secret: Utilizing Women as a Management Strategy.* Oxford University Press. New York.

Schwartz, F. N. 1989. "Management Women and the New Facts of Life." *Harvard Business Review* 67 (January/February): 65-76.

Sharpe, R. 1994. "The Waiting Game: Women Make Strides, But Men Stay Firmly in Top Company Jobs . . ." *Wall Street Journal* (March 29): A1 and A8.

Shenhav, Y. 1992. "Entrance of Blacks and Women Into Managerial Positions in Scientific and Engineering Occupations: A Longitudinal Analysis." *Academy of Management Journal* 35: 889-901.

Shrader, C. B., A. N. Hoffman, and T. M. Stearns. 1991. "Agency Directors and Network Centrality: An Examination of Resource Dependencies." *Journal of Managerial Issues* 3 (Spring): 46-61.

Teas, R. K. 1981. "An Empirical Test of Models of Salespersons' Job Expectancy and Instrumentality Perceptions." *Journal of Marketing Research* 18: 209-26.

Throup, C. 1994. "How Might Increasing the Number of Women in Senior Management Positions Help to Improve Corporate Performance?" Excerpts from the winning essay from the 1992 "Guardian Women in Management Scholarship to Manchester Business School." *The MBA Career Guide* (Spring): 17.

U.S. Department of Labor, Glass Ceiling Commission. 1994. "Managing Diversity and Glass Ceiling Initiatives as National Economic Imperatives." 1-48.

Wiersema, M. F, and K. A. Bantel. 1992. "Top Management Team Demography and Corporate Strategic Change." *Academy of Management Journal* 35: 91-121.

Zellner, W. 1994. "Women Entrepreneurs." *Business Week* (April 18): 104-110.

Guidelines for Submission of Manuscripts

All submissions must adhere to these requirements. Submissions that deviate from these guidelines may receive desk rejections. If in doubt consult The Chicago Manual of Style.
Manuscripts may be submitted for consideration by sending an e-mail file attachment to jmi@pittstate.edu.

Format – Type double-spaced papers with one inch margins, on 8½"x11" paper, using 12 pt. Times New Roman font. Place each figure, table, reference list, and abstract on a separate page; number pages after the first. Cover page should list title and name, position, affiliation, and mailing address of each author. On second page, include title and abstract. Submissions will not be returned.

Voice – Use the passive voice rather than the active, third person rather than first.

Title – Title should be specific, no more than fifteen words.

Abstract – Brief, no more than 250 words, that sets forth the main point of the paper. Three to five keywords must be supplied with the abstract, and field(s) of specialization (e.g., strategic mgmt.., org. behavior, etc.)

Length – Limit of 25 pages -- text pages, references, and tables/figures (cover and abstract pages not counted). You may exceed this limit by no more than 10 pages for a fee of $30 per page over 25. The maximum length of 35 pages would cost $300, **plus** the $100 administrative fee. This is to help defray extra production costs.

Footnotes are discouraged and should be put in the main text where possible.

Tables and Figures – Each should include a number and a title centered over. Use Arabic numbers for tables and Roman numbers on figures. Text should include a reference and placement of each. Place each figure/table on a separate sheet at the end.

Headings – Topical headings (centered, bold, all caps) and subheadings (at left margin, bold) should be used. Sub-subheadings should be indented and part of the paragraph, bold, and italicized, with a period at the end.

Student Samples – It is the position of JMI that while student samples in business research may be appropriate in certain situations, it is critical that the sampling method be appropriate for the research question under investigation. Authors should carefully consider the appropriateness of student samples and present valid arguments for their use.

Text Citations – Cite references in the body of the text:

- Author's name is in text, follow with year in parentheses -- "...James (1988) claims that..."
- Author's name not in text, last name, comma, and year- - "...some have argued (Thompson, 1972) that ..."
- Pagination (if needed) follows year, separated by a colon -- "...it has been claimed (Smith, 1984: 32) that ..."
- Two authors, give both names joined by "and" (not the symbol "&"); three or more use "*et al.*" -- "...another version (Chad and Barney, 1983) ..."; and "...it has been claimed (Bright *et al*., 1979) that ..."
- More than one reference to same author and year, use "a", "b", etc. in text and reference -- "...as was previously asserted (Lissner, 1989a: 12) ..."
- Authorless articles or studies, use name of journal or sponsoring organization, not title of article -- "...has been claimed (*American Law Review*, 1988) that ..."

References – The references should include only the most relevant work. The author should make sure that there is a strict "one-to-one correspondence" between the names (years) in the text and those on the list. Do not include unpublished work. References should follow the format below:

- Books: Bright, S. M. 1985. *New Marketing Developments*. New York, NY: Holt, Rinehart, and Winston.
- Journals: Jade, C. J., and C. C. Fish. 1987. "The Choice among Debt, Equity, and Convertible Bonds." *The Journal of Finance* 29 (October): 139-51.
- Three or More Authors: Smith, T. J., V. Height, and C. B. Lucas. 1951. *Work Transformed*. New York, NY: Basic Books.
- Article in Book Edited by a Different Author: Mikels, N. D. 1981. "Understanding Entrepreneurship." In *Contemporary Entrepreneurship*. Ed. J. Schick. Ann Arbor, MI: Hanover Press.

Pittsburg State University
Journal of Managerial Issues
Pittsburg, KS 66762