Interaction of Social Capital with Organizational Diversity in Knowledge Creation and Learning in the Workplace

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ABSTRACT

Scholars have recently stressed the importance of organization-based forms of social capital (Leana and Van Buren, 1999; Nahapiet and Ghoshal, 1998) as a relevant construct that connects employment practices and individual-level responses to organizational-level outcomes. The literature on diversity has revealed that demographic attributes influence individual and group outcomes and behaviors effecting workplace performance. Pfeffer's (1983) organizational demography suggests that dissimilarity and heterogeneity are negatively related to organizational effectiveness. Our paper explores the role of contextual work factors on organization success. Specifically, it addresses the question whether organizational social capital interacts with group heterogeneity in the workplace, thereby contributing to knowledge creation and organizational learning in the workplace.

Social capital (Coleman, 1988) is defined by three elements: obligation, information, and norms. Obligations consist of capital generated by mutual support and reciprocal relationships. Information is capital found in the existence of relationships, while norms are the social capital contained in a community. This social capital mediates the relationship between human capital and organization success. The high performance work systems literature has attempted to identify practices that improve organizational performances across many industries and work settings. The logic of high performance work practices is that employees hold knowledge and information that is valuable for organizational coping and success. High performance practices and organization involvement can bring this knowledge to the decision making process.

Our paper will attempt to study the contribution to social capital in a large university setting in the United States. Over 600 employees unionized support-staff participated in the study. The importance of our paper is that it uses social capital ideas to pull together three important literatures, organizational diversity, social capital development, and high performance work systems, and then relates these theory constructs to organizational effectiveness measures of knowledge creation and learning, contributions of suggestions that focus on profitability, efficiency, quality, cost performance, and customer satisfaction. The robust analysis and set of provocative findings stimulates both current applications to practice and also future research directions.

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Researchers have discovered social capital as an organizational asset in recent years. The notion that social capital as embedded in relationships of individuals, communities, networks, and societies can be linked to valued organizational outcomes has been identified by Burt (1997), Coleman (1988), Nahapiet and Goshal (1988), Walker et al. (1997), and Leana and Van Buren (1999). The basic construct of social capital (Coleman 1988) has been defined by three elements: obligation, information, and norms. Obligations consist of capital generated by mutual support and reciprocal relationships. Information is capital found in the existence of relationships, while norms are the social capital contained in a community. Friedman and Krackhardt (1977) found that education enhances social capital, which produces organization success. This social capital mediates the relationship between human capital and organization success. Leana and Van Buren (1999) introduce the construct of organizational social capital. This construct is defined as a resource reflecting the character of social relations in the firm. It is seen as being created by member's level of collective goal orientation, trust, which together enable successful collective action in the firm. Significantly Leana and Van Buren (1999) link the management of this type of social capital to employment and human resources practices. Our objective is to extend this literature by examining how social capital dimensions of trust, bridging/networking, and bonding interact between organizational diversity and value adding organizational outcomes. We shall now focus our review of the literature to illustrate the major points of our research questions.

Support for the Worker Constructs

The high performance work systems literature has attempted to identify practices that improve organizational performances across many industries and work settings (Berg, Appelbaum, Bailey, and Kalleberg, 1996; Huselid, 1995; Ichniowski, Shaw, and Prenushi, 1997; MacDuffie, 1995; and Pfeffer, 1994). The logic of high performance work practices is that employees hold knowledge and information that is valuable for organizational coping and success. High performance practices and organizational involvement can bring this knowledge to the decision making process. Obtaining previously unavailable information has been identified as a critical component of organization improvement by Adler (1992), Adler and Cole, (1993). Clearly employee knowledge has strategic value. Specifically, Grant (1996) notes that new production systems require coordination of many types of specialists who possess many different types of knowledge. Wruck and Jensen (1994) stress that initiatives such as employee involvement (EI) and Total Quality Management (TQM) require knowledge held by front-line workers to succeed.

Currently there is a debate as to which type of team based work system provides the greatest support for workers and employees. The two contending approaches are lean production derived from the Toyota Production System (Ohno, 1988) and Sociotechnical Systems Production (Niepce and Molleman, 1998) which reflects the thinking of researchers primarily located in England and Northern Europe. Each system sees worker support variables slightly differently.

Worker Support in Lean Systems

Lean manufacturing as a team-based work system was first popularized in the International Motor Vehicle Program conducted by Womack, Jones, and Roos at M.I.T. (Womack, Jones, and Roos, 1990). Since then a wide variety of writers have explored the implications of work in this manner (Preiss, 1997; Cutcher-Gershenfeld et al, 1998; Piore, 1984; Kenney, 1993; Handyside, 1997). Womack and Jones (1996) lay out the fundamental logic of "lean" as a worker support system. They use the construct of value stream analysis. Value stream analysis identifies front-line workers as being critically important to the enterprise because they are the last people to touch the product or provide the service customers receive. In this logic, workers must be supported by management and the union so that they do work of absolute clarity in adding value. Lean systems focus on removing waste from the value creation processes and in creating supportive conditions for enhancing worker effort. The workplace is reengineered with andon systems, visual management, quiet conveyors, small teams, team leaders for every five or so workers, fixed position stops, and electronic nerve centers to display current achievements to support employees. Engineering, maintenance, and support functions are moved closer to the shop floor to support employees. People systems such as training, supervisory support, and positive union-management relations are seen as integral to lean systems success (Adler, 1993, MacDuffie, 1995).

Sociotechnical systems researchers value support to workers for a different set of reasons. Beginning with the work of Trist and Bamforth (1951) and the pioneering writing of Emery (1959), sociotechnical systems (STS) writers have emphasized that workplace design has traditionally focused on design of the technical system while the role played by people and social systems has been diminished or relegated to a clear second place. Current writers (Niepce and Molleman, 1998; Cohen-Rosenthal, 1997; Heller, 1997) argue for the sociotechnical principle that work design be equally concerned with technical systems and social systems. Berggren (1998) reflects the view of several European theorists (Van Eijnatten, 1992; Asplund, 1981) in his belief that a pure application of STS principles is the best way to organize work. STS writers differ from "lean" theorists. Whereas lean writers support workers because of their role in adding value, STS researchers support workers because they value human dignity and choice as the focal point of work systems. Both approaches acknowledge the importance of training support, supervisory support, and positive union support to employees as necessary for employees to be able to achieve valued outcomes.

Theories of Diversity

Increasing ethnic and gender diversity of the workforce has drawn the attention of many organizations to respond to the demographic trends predicted initially by the Hudson Institute Report (Johnston and Packer, 1987). Jackson (1991) in her research concluded that the diversity of the workforce might change patterns of behavior that were established during an era when organizations and workgroups were relatively homogenous. Pfeffer (1983) uses the term organizational demography to refer to the demographic composition of formal organizations. Demography refers to composition in

terms of basic attributes, such as age, gender, educational level, length of service, race etc., of the social entity or organization. Organizations can be described in terms of their gender composition, racial composition, educational-levels of their employees, age composition, or length of tenure distributions of their members to name a few. Pfeffer contends that demographic distributions have a theoretical and empirical reality of their own, that are distinct from the aggregation of responses of the individual members within an organization. Consequently, he makes the case for the demography of formal organizations as an important explanatory variable in organizational analysis. Tsui et al. (1991) point out that demographic-attributes such a gender or age, and the relationship of an attribute between two or more individuals, are important for understanding social interactions and outcomes. They contend that any individual can be different from, or similar to, any other individual on a social unit on the demographic attribute being considered. Thus, 'being different" is a relational concept that applies to everyone—majority as well as the minority. Demographic attributes might represent information that individuals might use to infer one's similarity to others on such things as attitudes or beliefs. This in turn influences the individual's attraction towards other individuals. Consequences of low attraction include less communication, low social integration, and eventual turnover.

The organizational demography literature indicates that dissimilarity and heterogeneity are negatively related to organizational effectiveness. In fact, research indicates that demographic attributes are associated with differences in attitude, values, beliefs that have the potential to create conflict among team members, and can influence group outcomes and behaviors (Pfeffer, 1983). Studies also indicate that dissimilar members also face difficulties in integrating into a group. They are often made to feel uncomfortable in the group, are perceived as poor performers, and are pressurized to leave (O'Reilly et al. 1989; Tsui & O'Reilly, 1989). Schneider (1987) cautions that a lack of diversity can cause organizations to fail—as its people, structures, and processes may become so fixed to a particular segment of the environment that, when the environment changes, the existing people, processes and structures are no longer viable. They may experience "dry rot" which refers to the tendency of organizations to become increasingly unresponsive to signals from the larger environment that change is necessary (Argyris, 1976). The key is to ensure all members are called upon to contribute regardless of their cultural background. The challenge for many organizations is the need for heterogeneity to promote problem solving and innovation while balancing the need for organizational coherence and unity of action. Therefore, organizational efforts to build social capital as a process of building a positive organizational environment that effectively utilizes all employees can facilitate the integration of diverse individuals. This could then lead to better value-added organizational outcomes.

Theories of Social Capital

Modern theories of social capital (Seibert, Kramer, and Liden, 2001) focus on the importance of bridging and networking functions. In their seminal article, these authors compare and contrast three network-based theories (1) Granovetter's (1985) "weak ties" theory; the "structural holes" theories of Ron Burt (1992), and the "social

resources/content" theory of Sparrowe and Liden (1997). These theories provide support for viewing social capital as a construct within work organizations in two major ways. The constructs of Granovetter, (1985) and Burt (1992) offer process models of how employees may gain social capital in bridged or dense networks (Burt, 1992) or through the use of weak ties to encourage innovation (Granovetter, 1985). Contrary to these process approaches Sparrowe and Liden (1997) focus on resources contained in a network gained through bonding and/or trust between organizational members. Clearly, constructs from these modern models of social capital could be proposed as moderators between the constructs related to employee support and the dependent variables that reflect value-adding contributions of employees.

Value Adding Outcomes Related to Organizational Improvement

Both the high performance work system models of lean production (LP) and sociotechnical systems (STS) production posit the same constructs as representing value added by employees. If employees are supported and social capital gains occur, both LP and STS believe that knowledge creation and learning will then occur. In theory, employees become multiskilled, are willing to learn more tasks, are willing to offer views and ideas, and are more likely to appreciate the "big" picture of how their job fits within the organization. This learning is also seen as helping employees to become more flexible and cooperative if work needs to be reorganized or rescheduled. Both LP and STS value suggestions from employees. Both systems encourage employees to offer suggestions to improve profitability, quality, efficiency, and customer service and satisfaction. Lastly, both approaches value work satisfaction with all dimensions of the job. Satisfaction with management, team members, work role, pay, quality of product and service, union-management cooperation, and the overall job are stressed in both systems. In theory, LP is more concerned with satisfaction gained from applying learning to efficiency suggestions while STS focuses on overall job satisfaction leading to retention and motivation. Clearly, adequate theory exists to enable us to posit relationships between work support variables and value adding outcome variables. Most importantly, emerging theory on social capital in work settings is provocative and justifies further research on whether social capital is directly linked to valued outcomes and whether social capital moderates the predictions of valued outcomes from work support factors.

Sample

The study focused on unionized support-staff employees in a large mid-western university. A total of 650 employees were surveyed. The sample was predominantly female and Caucasian. The following contains a discussion of sample characteristics of the 650 employees who provided complete surveys. The sample contained 565 full-time employees (88.0%) and 68 part-time employees (10.6%). The sample included 39 males (6.1%) and 590 females (91.9%). Mean age of the employees was 43.0 with a standard deviation of 9.65. About 67 employees (10.7%) identified themselves as minorities. 108 employees (17.1%) were high school graduates, 244 employees (38.0%) had some college education, and 97 employees (15.10%) had a bachelor's degree.

Study Variables and Hypotheses

The literature review established that three classes of variables could be legitimately established to examine the general questions posed in this study. All of the study variables are rated on a 5-point Likert scale that ranges from strongly agree to strongly disagree.

Group Heterogeneity Variables

The independent variables focus on three aspects of diversity or heterogeneity related to age, race, gender, and education. Group heterogeneity was computed for each demographic characteristic assessed. Each functional department, such as admissions, payroll, registrar's office, or botany and plant pathology, to name a few, were counted as one functional group for the purposes of computing group heterogeneity. All the variables involved in computing group heterogeneity were based upon self-reported data provided by employees who were asked to report current departments to facilitate assignment into functional groups. Functional groups that had less than three members were rejected for this research. Approximately, 50 functional groups were identified for the purpose of data analyses. Although gender heterogeneity was computed, this variable was not included in the final analysis due to the extremely small sample size of males in the study that made this attribute statistically insignificant.

Two types of heterogeneity indices were computed. Allison (1978), in his review of measures of social inequality in social aggregates, observes that most measures of dispersion can be converted into scale invariant measures of inequality by dividing by the mean or some function of the mean. The **coefficient of variation V** (the standard deviation divided by the mean) was calculated for age heterogeneity[1]. For interval variables this measure provides the most direct and scale invariant measure of dispersion. For categorical variables such as gender, race, and education, group heterogeneity was computed using Blau's (1977) **index of heterogeneity**. Blau suggests the index as one of the methods to measure the integration of a social system. According to him, the operational criterion of the degree of heterogeneity in a population is that two randomly chosen persons do not belong to the same group. This index assesses the extent to which there are a number of significant categories in a distribution and how persons are dispersed over such categories. This measure, like the Gini index, is defined by aggregations as it seeks to assess to some degree the extent to which there is dispersion within a distribution. The index of heterogeneity varies from a low of 0 if all group members are the same) to a theoretical of high 1. Heterogeneity[2] was defined in the following manner:

$$\textbf{Heterogeneity} = (1-\sum P_i^2).$$

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[1] **Coefficient of variation V** $= \frac{\sigma}{\mu}$

[2] In this equation, 'P' is the proportion of group members in a category and 'i' is the number of different categories in a group. If all persons are in one group, there is no heterogeneity (1-1=0); If all groups have the same size, heterogeneity approximates unity with increasing number of groups.

Knowledge Creation, Learning, and Value-Adding Organizational Contributions

The dependent variable consists of three dimensions that define valued organizational outcomes. The three dimension contained in this construct are: knowledge creation and learning, information sharing, and value-adding organizational contributions. The three dimensions were combined to create this scale. The total scale measuring the dependent variable contained eighteen-items. Items measuring knowledge creation and learning measured responses related to continuous improvement, knowledge creation, opportunities to learn new skills, encouragement to use new skills, seeing how one's job relates to others in the organization, and organizational accommodation to training. Information sharing was measured on a five-item factor. It contained items related to sharing of information between team members, across teams, customer focus, and being able to have information to make work-related decisions. The dimension measuring value-adding organizational contributions consisted of four-items that related to demonstrated ability to make suggestions that contribute to organizational profitability, quality, efficiency, and customer service quality. Based on completed surveys (N=443) the coefficient alpha was computed to be .85.

Social Capital

The social capital variable consisted of three dimensions of trust, bridging, and bonding that researchers have generally applied in measuring social capital. Trust was defined as a positive resource that reflects the character of social relations in the organization. Bonding is characterized by mutual support and reciprocal relationships within the organization. It is also created by a member's level of collective goal orientation, information sharing and perceptions of being an important part of the workgroup. Bridging is an asset embedded in relationships and networks of individuals across the organization. The three dimensions of trust, bridging, and bonding were combined to create the social capital scale. Based on completed surveys (N=559) the coefficient alpha was computed to be .78.

Hypotheses

From the research on work and high performance systems, we can position the following hypotheses around the theme that social capital development will be significantly related to valued organizational outcomes.

Hypothesis 1: Group heterogeneity will predict knowledge creation, learning, and value added organizational contributions.

Hypothesis 2: Social capital will predict knowledge creation, learning, and value added organizational contributions beyond group heterogeneity.

Hypothesis 3: The interaction between group heterogeneity and social capital will predict knowledge creation, learning, and value added organizational contributions beyond perceptions of social capital alone.

Method

Coefficient alpha was calculated to establish reliabilities for all constructs. Correlations and multiple regression analyses were used to test the relationship between the group heterogeneity variables, social capital variable and the dependent variable of valued organizational outcomes. In the regression analysis, group heterogeneity was entered in step one, social capital on step two, and the cross-products of group heterogeneity and social capital were entered in step three. This procedure was followed to identify any interaction effects. The model proposed that each step of the regression would predict a significant amount of variability in valued organizational outcomes that is left unexplained by the previous step. When all the three (3) study hypotheses were tested, it was found that the overall regression model was highly significant. Results were not supportive of the group heterogeneity hypothesis but were strongly supportive of the predicted social capital-based hypothesis.

Results

Table I, II indicate the results of the correlation and regression analyses for the 3 hypotheses that were tested in the study. In the analyses when variables identified as group heterogeneity were correlated with the dependent variable namely, knowledge creation, learning, and value adding organizational contributions, the relationship was not significant and did not support hypothesis 1.

Table I
Correlations of Group Heterogeneity (Edhet, Racehet, Agehet) and Social Capital (SOCAP) Variables with Dependant Variables (OrgKLV)

Independent Variables	Dependent Variable
Edhet	**.010**
Racehet	**-.130**
Agehet	**-.001**
SOCAP	**.658****

P < *.01, ** .001

Hypotheses 2 stated that social capital will predict the dependent variable beyond group heterogeneity. In this analysis, the social capital variable was regressed with the dependent variable. The relationship was highly significant and was supported at the .000 level. Hypothesis 3 stated that the interaction between group heterogeneity and social capital will predict knowledge creation, learning, and value added organizational contributions beyond perceptions of social capital alone. This hypothesis was tested in step three of the regression analyses. In this analysis, the cross-product variables were regressed separately with the dependent variable. The cross-product or interaction term did not predict the dependent variable and showed no interacting effects.

Table II
Regression Results for Organizational Knowledge, Learning, and Value Adding Organizational Contributions (OrgKLV) Predicted from Social Capital (SOCAP), and Cross-Product

Variables	R^2 (OrgKLV)	Ch. R^2 Change	F	Sig.
Step 1: Racehet, Agehet, Edhet Group Heterogeneity (Hyp.1)	**.021**	**.021**	**.875**	**.456**
Step 1: SOCAP Social Capital (Hyp. 2)	**.576**	**.555**	**41.151**	**.000**
Step 3: CPSOCAP*HET Cross-Products of Het * SOCAP (Hyp. 3)	**.582**	**.006**	**23.483**	**.652**

Discussion

The study showed that group heterogeneity had no impact upon organizational knowledge, learning, and value adding organizational contributions. The results are encouraging in that social capital constructs were found to be strongly related to the three dimensions of organizational knowledge, learning, and value adding organizational contributions. The trust-bridging-bonding scale showed a high reliability and definitely shows promise for future research in work settings. Although social capital did not interact with group heterogeneity factors to help predict valued organizational outcomes, the results show that organizations need to pay attention to building social capital if they desire to create high-performance work systems.

Limitations

This study faced limitations as it was conducted in one organization. The study was conducted in a large university having an extremely diverse student body. The university support staff that provided the basis of the study constantly deals with organizational diversity within their units. Moreover, the University has very enlightened programs and policies that promote institutional diversity. In the larger context, the University's diverse environment might have masked the effects of heterogeneity. Inclusion of manufacturing employees and other higher-level professional employees would have added to its generalizeability and provided desirable variance.

Implications for Theory

The results clearly make a contribution to the high performance work system literature. The strong linkages found for worker support in the forms of social capital confirm the major tenet of team-based work systems. While this study did not test the alternate models of worker support offered by lean production (Womack and Jones, 1996) or socio-technical systems (STS) production (Berggren, 1992), it did find support leading to work outcomes such as knowledge creation, suggestions for improvement, and work satisfaction. The findings support the work of Cutcher-Gershenfeld et al. (1988)

and Nonaka and Takeuchi (1995) in acknowledging the value of tacit and explicit knowledge creation as an important outcome.

The social capital findings also contained merit. The integrity of a social capital scale consisting of trust, bridging, and bonding factors was validated. Its high alpha levels for each of these scales is impressive and can serve as a stepping stone for other social capital researchers. The linkage of social capital to the dependent variable was also surprisingly strong (significance at the .000 level). Future research in organizational studies and performance may well find the social capital variables represent a more parsimonious approach to ascertaining more troublesome constructs such as organizational climate (Schneider, 1983) and organizational culture (Schneider, 1990). Both climate and culture constructs present a history of posing definitional and methodological currents. Social capital constructs may well prove efficacious in tapping many of the organizational properties as climate and organizational culture.

More research linking social capital constructs to organizational outcomes is needed. A study comparing social capital to organizational culture and to organizational climate using discriminant analysis would also make a contribution. The interaction of social capital with the independent variables of group heterogeneity was in the right direction but was unsupported. This can be seen as promising conceptually and worth replicating with a larger and more diverse sample.

Implications for Practice

This study adds support to a growing trend of organizing work in a high performance work system (HPWS) mode. The HPWS models believe that workers receiving support, working in teams, being granted problem-solving autonomy, and being allowed to participate in and/or direct their own governance will lead to positive attitudes, positive collegiality and teamwork, interest in learning more about jobs and the organization, and an increase in work centrality. Increases in these positives are expected to lead to valued work outcomes. This study confirmed strong linkages between social capital scores and positive organizational work outcomes. The major implication is that employers should continue to look for ways to build social capital if they desire to transform their organizations to high-performance work systems.

Our study makes modest contribution to the work social capital literature and opens the door to important new research directions. The research frontier ahead is challenging but our findings offer support for the worthwhile nature of the journey.

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