

Organizational Culture and Innovation in Nonprofit Organizations

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Introduction

The question of why and how organizations innovate has captured the interest of many disciplines and resulted in much research. In an effort to answer this question, researchers have explored how various organizational, individual, and environmental factors foster or inhibit innovation. Unfortunately, although the literature on innovation in the private and public fields is vast, the current innovation models offer little direction to those who want to influence organizational innovation (Meyer & Goes, 1988). In fact, the most consistent theme running through the innovation literature is that the empirical findings are inconsistent (Wolfe, 1994). This warrants attention and detailed re-examination of the factors included in the conceptual models tested.

In seeking to identify the alternative sources of the inconsistency in innovation research results, Fiol (1996) notes that the innovation researchers have focused primarily “on the means to effectively squeeze innovative activity out of organizations, with little regard for the continuous accumulation of knowledge that provide the source of that capability” (p. 1013). Variables most often employed in innovation studies include: formalization, professionalization, specialization, organizational size and resources, slack (the resources an organization has beyond what are

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minimally required to maintain operations), complexity, centralization, managerial attitude toward change, technical knowledge resources, administrative intensity, external communication, internal communication, and vertical differentiation (Damanpour; 1987; Damanpour, 1996; Kimberly & Evanisko, 1981; Meyer & Goes, 1988; Schin & McClomb, 1998).

It is obvious that the existing innovation models focus predominantly on structural explanations of innovation, failing to acknowledge the role of the human factor in the process of innovation (Claver & Llopis, 1998; Daft, 1982). Based on his review of innovation models and empirical evidence, Daft (1982) suggests that organizational employees are central in the consideration of the accurate modeling of organizational innovation. Their perceptions of organizational values and expectations are especially important in understanding the process of innovation. This process is unstructured and highly uncertain; behaviors necessary to produce innovation are unknown; and the probability of efforts being successful is unclear (Hauser, 1998a; O'Reilly, 1989; Zaltman, Duncan, & Holbek, 1973). Because of this uncertainty, the innovation process cannot be traditionally planned, organized, and guided by formal rules and procedures; it is rather fostered through the creation of an innovative culture (Russel, 1990). In situation of changes and fluxes, organizational culture serves as a supplement to structure and as a complement to leadership, and therefore is essential for assessing the organization's potential to innovate (Hauser, 1998).

A number of authors also point to organizational culture as an effective way of motivating and directing the solution of unstructured problems, and argue that culture, not just structure, is central to organizing for innovation (Amabile, 1997; Dougherty, 1996; Morgan, 1996; Pervaiz, 1998; Roberts, Watson, & Oliver 1989; Schein, 1994). Furthermore, organizational culture is seen as fostering individual creativity (Amabile, 1997; Higgins, 1995).

Creativity, or the production of novel ideas, is the first step toward innovation, which is the successful implementation of those ideas. When creativity takes place in the right organizational culture, it results in innovation.

Given the complexity of the innovation phenomenon and the inconsistency of innovation research results, it is increasingly evident that the cultural perspective might be useful for understanding innovation (Roberts et al., 1989). Unfortunately, while recognized as important, the influence of organizational culture on organizational innovativeness remains at the level of theory. The existing research is plagued with conceptual and methodological issues that preclude researchers from drawing conclusions regarding the role of culture in fostering or inhibiting innovation.

This research seeks to address those issues by applying innovative theories of cultural models along with methodological tools from the field of cognitive anthropology. The aim of this project is twofold: 1) examine the relationships between organizational culture and innovation while controlling for alternate explanatory variables; and 2) improve the conceptualization and operationalization of organizational culture and innovation constructs.

Specifically, this research seeks to answer the following questions: 1) Is cultural consensus associated with organizational innovativeness? 2) Are organizational values associated with organizational innovativeness? 3) Is the interaction of cultural consensus and organizational values associated with organizational innovativeness? 4) Is the structure of organizational culture associated with organizational innovativeness? 5) Will organizational culture be related to organizational innovativeness after controlling for the effects of alternate explanatory variables? 6) Will the effect of organizational culture differ depending on the type of innovation, its nature, and the stage of its implementation? It was hypothesized that cultural

consensus, organizational values, interaction of cultural consensus and organizational values, and structure of culture will be associated with organizational innovativeness after controlling for the effects of alternate explanatory variables.

To improve the conceptualization and operationalization of innovation and organizational culture constructs, an in-depth understanding of innovations, their type, stage of implementation, and nature was obtained; and three domains of organizational culture were assessed: cultural consensus (the degree to which organizational values are shared), the structure of organizational culture, and organizational values (the content of consensus). The study sample is composed of all employees, executives, and board members of the Communities In Schools organizations in the States of Georgia, South Carolina, North Carolina, and Florida. The first year of the study focused on those in the State of Georgia, while the next year will extend attention to those in the States of South Carolina and Florida. In this study, the organization is used as a unit of analysis.

Phase I: Project Activities

In order to enlist the executive directors' support for the project, the researchers attended the Executive Directors' meeting held in McRay, Georgia, in June, 2003, where they had an opportunity to present the project and invite the executive directors to participate in the study. During that meeting 30 of 48 executives agreed to participate in the study. After contacting the rest of the executives of the original 48, 10 more agreed to participate, and 1 declined the invitation. Five of the remaining 7 organizations were too young to participate in the study (were less than 2 years old); and 2 organizations were not included in the study because they had new leaders who would not have been able to provide information about the organization's activities over the last two years.

Each of those executives was contacted early in the fall and site visits were scheduled. Prior to the visit, each director received a copy of the interview guide and a leadership questionnaire. This guide included 15 questions regarding different types of innovations, which were derived from the most widely used typologies of innovation (Perri, 1993; Damanpour, 1987). Directors were asked to report whether or not one or more innovations had been attempted in a particular area and describe them. They were also asked to identify the stage of innovation adoption, the degree to which innovation was radical or incremental, and whether it was original - developed within an organization, or adapted – borrowed from other organizations. Having the guide before the interview gave the executive directors ample time to think about their responses. After the interview the researchers typed up the information and emailed it back to the executive directors to assure its accuracy. Additionally, the executive directors were asked about the number of departments and programs associated with an organization, number of job classifications of personnel, number of partners, budget, number of employees and board members. Organizational documents, memos, informational booklets, annual reports, and financial documents were also collected and analyzed to get a better sense of organizational functioning and culture. Additionally, demographic information for the counties where the CIS sites was located and used to place each of the organizations in the larger context and to account for differences in population and environmental characteristics.

While on the site, the team members left copies of the questionnaire for each employee and board member, which included the measures of organizational culture, leadership, formalization, centralization, and demographic questions. After numerous follow up calls and mailing out of the reminder cards, satisfactory response rates were obtained for 36 organizations (75% response rate). Due to the changes in their leadership, no questionnaires were received

from the employees of 4 organizations which had originally agreed to participate. Because the unit of analysis in this study was the organization, the response rate for each of the 36 sites was more important than the overall response rate (response rates for each of the 36 organizations are presented in Table 1).

Measures

Organizational Innovativeness. For the purpose of this study, organizational innovativeness was defined as the number of innovations an organization adopted within the last two years (Gopalakrishnan & Damanpour, 2000). Innovation was defined as the implementation of an idea, service, process, procedure, system, structure, or product that is new to the prevailing organizational practice. Organizational innovativeness was operationalized with fourteen items developed on the basis of Perri (1993) and Damanpour's (1987) typologies of innovation. Numerous studies have made use of these typologies in operationalizing organizational innovativeness (Damanpour, 1990; Damanpour, 1996; Gopalakrishnan & Damanpour, 2000; Russell, 1990; Roberts et al., 1989; Schin & McClomb, 1998). Of the fourteen items, the following five indicate administrative innovation: the creation of a new performance evaluation system, the introduction of a new training topic for employees or volunteers, the creation of a new employee/volunteer incentive/reward system, the creation of a new recruitment system, the creation of a new performance evaluation system, and the creation of a new organizational structure or shape. The following items indicate technological product innovation: the introduction of new services/programs, significant change in already existing services/programs, the extension of the services to new groups of clients previously not served by the organization, the production of a new product, the introduction of a new activity/event for clients/employees/volunteers, and the redesign of a product already being produced into

something new and significantly different. Finally, technological process innovation is indicated with the following items: the creation of a new way of service delivery and the significant conversion of an existing way of service delivery. The last item asked the respondent to identify any other innovations that the organization implemented which were not mentioned during the interview.

The executives directors were asked to identify whether innovation is original (developed within an organization) or adapted (borrowed from other organizations), and to indicate its stage of implementation and the degree to which it was radical or incremental.

Organizational Culture. Organizational culture in this study was defined as a set of shared values that help organizational members understand organizational functioning and thus guide their thinking and behavior (Desphande & Webster, 1989). It was measured using the Organizational Culture Profile (OCP) developed by O'Reilly, Chatman, and Caldwell (1991). The instrument contains a set of 54 value statements, 23 of which factored substantially alike in numerous studies forming seven value dimensions: attention to detail, innovation, outcome orientation, aggressiveness, team orientation, stability, and people orientation (Chatman & Jehn, 1994; O'Reilly et. al., 1991; Sheridan, 1992). Those twenty-three value statements were used for the purpose of this study.

The OCP shows reasonable reliability and convergent validity. The instrument has demonstrated moderate test-retest reliability (median $r = .74$, range = $.65 - .87$). The convergent validity of the instrument was established through the significant positive correlation ($r = .28$, $p < .05$) between person-organization fit assessed with the OCP and normative commitment, defined as attachment to an organization based on value congruence (O'Reilly et al., 1991). Social desirability bias was addressed by casting the items in neutral terms.

The Alternate Explanatory Variables

Transformational Leadership. Transformational leadership was defined as a set of practices employed for developing relationships between leaders and employees. It was measured by the Leadership Practices Inventory (LPI) (Kouzes & Posner, 1993). All employees were asked to rate a set of 30 behaviorally based statements regarding five leadership practices: Challenging the process, Inspiring the shared vision, Enabling others to act, Modeling the way, and Encouraging the heart. This instrument was selected because it measures leadership behaviors that are consistent with the transformational leadership style, which has been identified as ideal for promoting innovation. Furthermore, it has been shown to have adequate psychometric properties, with internal reliabilities ranging from .81 to .90 and test-retest reliabilities averaging nearly .94 (Posner & Kouzes, 1992).

Size was operationalized as a total count of full-time, part-time employees, and active volunteers. To be consistent with previous research practice, the log of the number of employees and volunteers will be used as a measure of size (Kimberly & Evanisco, 1981).

Complexity was operationalized as the number of departments and programs associated with an organization.

Specialization was measured by the number of job classifications of personnel.

Interorganizational links were operationalized as the number of organizations with which the organization partners/collaborates/cooperates.

Centralization was defined as the degree to which employees participated in decision making concerning important organizational policies and procedures. The four-item measure developed by Hage and Dewar (1973) was used to measure centralization. The participants were provided with a five-step scale to indicate how frequently they participate in decision making

regarding the adoption of new programs, adoption of new policies, promotion of professional staff, and hiring of new staff.

Formalization was defined as the extent to which emphasis is placed on organizational rules and procedures (Hage & Dewar, 1973). The four-item measure, also adopted from Hage and Dewar (1973), was used to measure formalization.

The remaining survey questions focus on employees' and executive directors' gender, race, age, length of employment in an organization, professional background, education, and job title.

Data Aggregation

Since conceptual and operational definitions of the major variables of the study pertain to an organization, the estimates for major variables were obtained for each of 36 organizations. Upon completion of the separate analyses for each organization, a new data set was created (N=36), where the rows represented each of the organizations, and the columns consisted of the measures of cultural consensus, six dimensions of organizational values, structure of culture, organizational innovativeness, and alternate explanatory variables. These aggregated estimates were used in further data analyses.

Results

Sample Description

Table 2 displays organizational characteristics and demographic information concerning the executive directors. Organizations' ages ranged from 2 to 13 years, with a mean age of 9.34 years, a median of 4.50, a range of 29, and a standard deviation of 2.99. The number of employees ranged from 1 to 66, with a median of 8, a range of 65, and a standard deviation of 14.24. They had a mean of 5 job classifications, with a minimum of 1 and a maximum of 30. The

organizations had a mean of 8.47 programs, with minimum of two and maximum of 30 programs.

The ages of the executive directors ranged from 28 to 72, with a mean age of 44.92, a median age of 43, and a standard deviation of 11.61. The mean service length of the executive was 5.78, with minimum of one year and maximum of 30, and a standard deviation of 4.67. Five executive directors were male, 35 were female. Nine of them were African-American, and 27 were Caucasian. One had some college education, 23 were college graduates, and 12 had graduate degrees.

Descriptive Statistics for Major Study Variables

Organizational Innovativeness

First, data from the face-to-face interviews with the executive directors were analyzed to obtain the counts of different types of innovations (administrative, technological product, and technological process) along with their stage of implementation, and nature (original vs. adapted; radical vs. incremental).

Means, standard deviations, minimum and maximum values for each type of innovation are reported in Table 3. The mean number of implemented innovations was 18.15, with a standard deviation of 10.25, a minimum of 3, and a maximum of 46.

Figure 1 shows that more innovations were original or developed within the organizations than borrowed (adapted from other organizations). Technological product innovation was the most often implemented type of innovation (Figure 2), followed by administrative innovation, and process innovation. Significantly higher means for radical innovations indicate that the organizations tended to implement innovations that differed significantly from the existing organizational practices (Figure 3).

More administrative innovations were original (mean = 4.38, SD = 3.801, min = 0, max = 15) than adapted/borrowed (mean = 2.63, SD = 2.41, min = 0, max = 10). Most of them were already implemented, with very few being implemented or planned. Similarly, more technological product innovations were original (mean=6.10, SD = 4.43, min = 0, max = 22) than borrowed (mean = 4.08, SD = 3.54, min = 0, max = 15). While almost all reported technological product innovations were implemented, the organizations also reported having plans to implement other product innovations in the future (mean = 1.18, SD = 1.63, min = 0, max = 7). Finally, process innovations were primarily original (mean = .83, SD= 1.13, min = 0, max = 5) and implemented (mean = .83, SD 1.15, min 0, max = 5).

Perceived Organizational Innovativeness

In addition to obtaining a count of innovations, a more subjective assessment of organizational innovativeness was obtained by asking employees and board members of participating organizations to compare their organization with other similar organizations and indicate how they would rate their organization on the number of innovations or new ideas introduced by their organization (Likert type scale, 1 = Far below average; 5 = Far above average). A mean perceived innovativeness was 3.91, with a SD of .45, a minimum value of 2.92 and a maximum value of 5.

Measuring Organizational Culture Variables

The cultural consensus analysis routine in ANTHROPAC (Borgatti, 1992) was used to analyze the data on organizational culture. Twenty five value statements served as the input to cultural consensus analysis. ANTHROPAC used these value statements as units of analysis and the employees as variables in a factor analysis.

Cultural Consensus

ANTHROPAC provided two measures of cultural sharing – the ratio between the Eigen value of the first factor and the Eigen value of the second factor (if the first factor is three times larger than the second factor, we can say that cultural consensus exists), and the average competence coefficient. Eigenvalue indicates how much of the theoretical construct, in this case organizational culture, is explained by the shared common variance in the set of variables loading on the single factor. In this study 25 value statements were used as units of analysis and the informants as variables in a factor analysis. Thus, the Eigenvalue indicated the degree of agreement among employees about the cultural values. Figure 4 shows that most of the ratios met the three-times rule, suggesting very strong cultural consensus in these organizations. Only five organizations had ratios smaller than three, which was indicative of weak cultural consensus.

Average competence coefficient was yet another indicator of degree of consensus (Romney, Weller, & Batchelder, 1986). It was the mean of the cultural knowledge (competence) coefficients for each informant. These individual coefficients were the factor loadings of each informant on the first factor, and indicated how strongly that individual's knowledge was correlated with the composite group knowledge. Cultural knowledge scores normally range from 0 to 1. A score of .7, for example, would indicate that an individual answered in a way that corresponded to the group answers 70% of the time. The higher the average competence coefficient was, the higher consensus was said to exist. Average competence coefficients for this sample of organizations were very high, indicating high agreement among the employees on a set of culture values. Only 9 organizations had average competence smaller than .50 (Figure 5).

Organizational Values (Content of Consensus)

In addition to providing the estimate of cultural consensus, ANTHROPAC produced the knowledge key, or the consensus answers, for each of the 25 value statements. These weighted consensus ratings were summed up to obtain the scores for each value dimensions: innovation, detail orientation, people orientation, outcome orientation, team orientation, and stability. Table 4 shows the descriptive statistics and reliabilities for the six cultural value dimensions and provides the correlation matrix.

The team orientation and the people orientation value dimensions had the highest means (5.66 and 5.52 correspondingly), followed by the outcome orientation (mean = 5.27), the stability (mean = 4.98), the detail orientation (mean = 4.59), and the innovation (mean = 4.56). The people orientation value dimension was positively related to the outcome orientation ($r = .413$, $p < .05$) and the team orientation ($r = .701$, $p < .01$) value dimensions. The detail orientation value dimension was inversely correlated with the outcome value dimension ($r = -.370$, $p < .05$), and positively related to the stability ($r = .710$, $p < .01$) and the innovation ($r = .359$, $p < .05$) value dimensions. The outcome orientation dimension was related to the team orientation value dimension ($r = .625$, $p < .01$). Finally, the stability value dimension was positively related to the innovation value dimension ($r = .386$, $p < .05$).

The Structure of Culture

The individual competence coefficients generated by ANTHROPAC were used for assessing the structure of organizational culture. Scatter-plots, where individual loadings (competence coefficients) on the first factor were plotted against individual loadings on the second factor, were obtained for each organization. Each scatter-plot was carefully examined for the patterns and based on the observations as well as the existing typologies of the structures of

cultures four types of culture structures were identified: 1) strong unifying culture (Figure 6) ; 2) strong unifying culture with a cluster of people having low individual competence coefficients (Figure 7); 3) pluralistic culture (characterized by consensus within existing subcultures and absence of an overall unifying culture) (Figure 8); and 4) integrated pluralistic culture (characterized by consensus within existing subcultures and an overall unifying culture) (Figure 9). The Cluster analysis was further performed to validate the visual assessment of the structure of culture.

For the organizations with strong unifying cultures, the ratios between the Eigen value of the first factor and the Eigen value of the second factor ranged from 3.20 - 14.36. Both of these measures of cultural consensus indicate very strong sharing of cultural values. Almost all employees and board members of those organizations had competence coefficients of .50 and higher and clustered tightly together.

For the second type of culture (strong unifying culture with a cluster of people having low individual competence coefficients) the ratios ranged from 3.32 – 5.60. While this suggests strong cultural consensus, further examination of the scatter-plots revealed that while the majority of employees and board members shared the cultural values, there was also a significant number of those who had fairly low competence coefficients and did not cluster together.

For the pluralistic culture (characterized by consensus within existing subcultures and absence of an overall unifying culture) the ratio values ranged from 1.45 – 2.76, indicating the absence of one unifying culture. The scatter-plots showed two clusters of people with high individual competence coefficients clustering tightly together, suggesting the existence of subcultures; as well as a group of people with low competence coefficients scattered all over the space.

Finally, for the integrated pluralistic culture (characterized by consensus within existing subcultures and an overall unifying culture) the ratios ranged from 3.18 – 5.60. Again, while this suggests strong cultural consensus, the examination of the scatter-plots showed the existence of two subcultures (2 clusters of people with high competence coefficients clustering tightly together).

Organizational Values and the Structure of Culture

To see whether there were differences in organizational values across the four structures of cultures, a one-way ANOVA was computed. Significant differences were found among the groupings for the detail orientation ($F = 3.091, p < .05$), the outcome orientation ($F = 5.902, p < .01$), and the stability ($F = 4.823, p < .01$) value dimensions. Tukey's HSD was used to determine the nature of the differences between the structures of cultures. This analysis revealed that the organizations with strong unifying cultures scored lower on the stability value dimension ($M = 4.75$) than the organizations with the pluralistic cultures ($M = 5.13$) and the strong unifying cultures with a cluster of people having low individual competence coefficients ($M = 5.06$). Furthermore, those organizations also had lower detail orientation value scores ($M = 4.41$) than the organizations with pluralistic cultures ($M = 4.83$).

Lastly, the organizations with the integrated pluralistic cultures scored lower ($M = 4.66$) than those with the pluralistic, the overall unifying, and the strong unifying culture with a cluster of people having low individual competence coefficients ($M = 5.21$; $M = 5.44$; $M = 5.38$ correspondingly).

Alternate Explanatory Variables

Descriptive statistics for the alternate explanatory variables are provided in Table 5. After obtaining the scores for the major variables in the model and creating an aggregate data file

(N=36) the authors proceeded to examine bivariate correlations among the major study variables, and then to test the final model.

Correlational Analyses

Organizational Innovation and Culture Variables

The first four research questions and question number 6 were concerned with the relationships between organizational innovativeness and three culture variables – cultural consensus, organizational values, and the structure of organizational culture. The statistical analysis performed to answer these questions followed the logic of the cultural consensus model. The very first step was to assess overall cultural consensus and whether it was related to organizational innovativeness. The next step was to determine what organizational values employees shared (consensus content), and how these values were related to organizational innovativeness. Finally, the structure of organizational culture was explored and its relationship with innovativeness was assessed.

Bivariate correlations between 12 innovation variables and culture variables were obtained to answer the research questions 1, 2, and 6. Only one type of innovation was related to cultural consensus. Original process innovation was negatively related to cultural consensus ($r = -.323, p < .05$).

To follow up on this result we explored the possibility of the presence of a non-linear relationship between organizational innovativeness and cultural consensus. A number of fit methods were employed to find the best fitting curve, but the quadratic regression fit method seemed to produce the best fit (see Figure 10 for a scatter-plot with a fitted curve).

Unfortunately, at this point sample size is too small to test this relationship.

Perceived innovativeness was positively correlated with the people orientation ($r = .430$, $p < .01$), the team orientation ($r = .359$, $p < .05$), and the innovation ($r = .403$, $p < .05$) value dimensions. Cultural consensus was inversely correlated with the detail value dimension ($r = .393$, $p < .05$) and the stability value dimension ($r = -.500$, $p < .01$).

Administrative borrowed innovation was positively correlated with the outcome ($r = .295$, $p < .10$) and the team orientation ($r = .385$, $p < .05$) value dimensions. Administrative planned innovation was negatively related to stability value dimension ($r = -.394$, $p < .05$). Original process innovation and implemented process innovation were related to the detail value dimension ($r = .317$, $p < .05$ and $r = .313$, $p < .10$ correspondingly).

To answer the research question 3, six interaction terms were created for cultural consensus and each of the six value dimensions. Multiple regression was employed to assess the interaction effect. None of the interaction terms were found to be significant predictors.

To answer the question of whether there was a relationship between the structure of culture and organizational innovativeness, multiple regression analyses were performed for each type of innovation, where the structure of culture variable was included as a dummy variable. No significant results were obtained.

Relationship between Organizational Innovation and Alternate Explanatory Variables

Correlational analyses were obtained for organizational innovativeness and a set of explanatory variables before seeking to answer the question of whether organizational culture would be related to organizational innovativeness after controlling for the effects of those variables.

Organizational Innovation and Leadership Practices

Perceived innovativeness was positively correlated with each of the five leadership practices: Challenges the process ($r = .758, p < .01$), Inspires shared vision ($r = .745, p < .01$), Enables others to act ($r = .670, p < .01$), Models the way ($r = .678, p < .01$), and Encourages the heart ($r = .516, p < .01$).

Innovations currently being implemented were related to four leadership practices: Challenges the process ($r = .315, p < .10$), Inspires shared vision ($r = .321, p < .10$), Enables others to act ($r = .312, p < .10$), Models the way ($r = .315, p < .10$), and leadership total ($r = .324, p < .10$).

The leadership practice of Challenges the process was positively related to process innovation ($r = .351, p < .05$) and original process innovation ($r = .335, p < .05$). Innovations in organizational processes that were currently being implemented were positively related to the leadership practices of Challenges the process ($r = .312, p < .10$) and Inspires shared vision ($r = .292, p < .10$). Finally, there was a moderate relationship between incremental innovation and the leadership practice of Modeling the way ($r = .299, p < .10$).

Organizational Innovation and Organizational Structural Variables

All types of innovations were positively related to the size variable. Perceived innovation, however, was not related to size. All innovation types except borrowed and product innovations were positively related to the complexity variable. Similarly, almost all innovations were positively related to the specialization variable (with the exceptions of borrowed innovation and perceived innovation). There was also a positive relationship between the inter-organizational links variable and almost all types of innovations (with the exceptions of process innovation and perceived innovation). Finally, only perceived innovation was related to formalization

($r = -.303$, $p < .10$) and centralization ($r = .582$, $p < .01$) variables. Original innovation was negatively related to environmental turbulence variable ($r = .333$, $p < .05$).

Testing the Model

Hierarchical multiple regressions were conducted to determine which independent variables (cultural consensus; six value dimensions; alternate explanatory variables) were the best predictors of different types of innovations thus far into the study. Evaluation of linearity led to the natural log transformation of the size and complexity variables. Twelve multiple regression models were tested (one for each type of innovation). First, cultural consensus was entered into equation. Second, six cultural value dimensions were entered, followed by the alternate explanatory variables. The results of these analyses are shown in Table 7 (results are reported only for the models that were statistically significant).

Regression results indicate an overall model of three predictors (inter-organizational links, formalization, and leadership) that significantly predict innovation (total number of innovations), $R^2 = .826$, $p < .05$. Inter-organizational links variable was the only significant predictor of administrative innovation, accounting for 70% of its variance. Formalization and inter-organizational links were the most important predictors of product innovation, accounting for 74.4% of its variance. The team orientation value dimension was the only good predictor of process innovation, accounting for 76.7% of its variance. Finally, a model of three predictors (inter-organizational links, specialization, and leadership) significantly predicted original innovation, $R^2 = .811$, $p < .05$.

Future Activities

In the coming year, this study will extend data collection to a sample of nonprofit organizations in the states of South Carolina, North Carolina, and Florida. Data collection steps

and analysis procedures will follow similar steps as those used in the first year. Data from the additional sites will enable us to conduct further tests of associations and of the model initiated with first year data.

Table 1. Response Rates

| Organization | Number of employees | Number of board members | Number of surveys received | Response rate % |
|--------------|---------------------|-------------------------|----------------------------|-----------------|
| Org 1 | 30 | 6 | 17 | 47.2 |
| Org 2 | 2 | 20 | 15 | 68.2 |
| Org 3 | 13 | 21 | 18 | 53 |
| Org 4 | 13 | 21 | 23 | 67.6 |
| Org 5 | 2 | 16 | 15 | 83.3 |
| Org 6 | 4 | 13 | 14 | 82.4 |
| Org 7 | 17 | 23 | 26 | 65 |
| Org 8 | 2 | 20 | 22 | 100 |
| Org 9 | 2 | 15 | 12 | 70.6 |
| Org 10 | 6 | 5 | 5 | 45.5 |
| Org 11 | 6 | 21 | 6 | 22.2 |
| Org 12 | 5 | 22 | 15 | 55.6 |
| Org 13 | 14 | 25 | 14 | 35.9 |
| Org 14 | 1 | 8 | 7 | 77.8 |
| Org 15 | 2 | 15 | 6 | 35.3 |
| Org 16 | 9 | 11 | 12 | 57.1 |
| Org 17 | 2 | 9 | 6 | 54.6 |
| Org 18 | 5 | 24 | 29 | 100 |
| Org 19 | 9 | 26 | 20 | 57.1 |
| Org 20 | 8 | 15 | 10 | 43.5 |
| Org 21 | 66 | 16 | 47 | 57.3 |
| Org 22 | 17 | 23 | 8 | 20 |
| Org 23 | 8 | 22 | 10 | 33.3 |
| Org 24 | 12 | 9 | 9 | 42.9 |
| Org 25 | 5 | 12 | 7 | 41.2 |
| Org 26 | 11 | 18 | 21 | 72.4 |
| Org 27 | 12 | 20 | 6 | 18.75 |
| Org 28 | 14 | 11 | 21 | 84 |
| Org 29 | 15 | 20 | 7 | 20 |
| Org 30 | 2 | 12 | 5 | 35.7 |
| Org 31 | 2 | 25 | 11 | 40.74 |
| Org 32 | 2 | 23 | 12 | 48 |
| Org 33 | 3 | 22 | 25 | 100 |
| Org 34 | 8 | 27 | 8 | 22.9 |
| Org 35 | 18 | 40 | 36 | 62.1 |
| Org 36 | 4 | 12 | 7 | 43.75 |

Table 2. Organizational Characteristics and Demographic Characteristics of Executive Directors

| Characteristics | Mean | Median | SD | Range | Min | Max |
|----------------------------------|-------|--------|-------|-------|-----|-----|
| 1. Age of the organization | 9.34 | 4.50 | 2.99 | 11 | 2 | 13 |
| 2. Number of programs | 8.47 | 6.50 | 7.82 | 28 | 2 | 30 |
| 3. Number of employees | 10.94 | 8.00 | 14.24 | 65 | 1 | 66 |
| 4. Number of board members | 19.74 | 20 | 8.44 | 45 | 5 | 50 |
| 5. Number of job classifications | 5 | 4.50 | 2.985 | 12 | 1 | 13 |
| 6. Age of leader | 44.92 | 43 | 11.61 | 44 | 28 | 72 |
| 7. Leader's length of service | 5.78 | 5 | 4.67 | 29 | 1 | 30 |

Table 3. Descriptive Statistics for Innovation Variables

| Type of innovation | Mean | Median | SD | Min | Max |
|-----------------------------|-------|--------|-------|-----|-----|
| Total number of innovations | 18.15 | 16 | 10.25 | 3 | 46 |
| Borrowed | 6.87 | 6 | 5.22 | 0 | 25 |
| Original | 11.25 | 9 | 7.24 | 0 | 36 |
| Radical | 15.85 | 13 | 9.39 | 3 | 41 |
| Incremental | 2.30 | 2 | 1.77 | 0 | 7 |
| Administrative | 7 | 6 | 4.87 | 1 | 19 |
| Technological product | 10.15 | 9 | 6.43 | 1 | 30 |
| Technological process | 1 | 1 | 1.16 | 0 | 5 |
| Implemented | 15.48 | 13.50 | 9.39 | 3 | 45 |
| Being implemented | 1.10 | 0 | 2.33 | 0 | 12 |
| Planned | 1.58 | 1 | 2.17 | 0 | 10 |

Figure 1. Types of Innovations: Original and Adapted/Borrowed

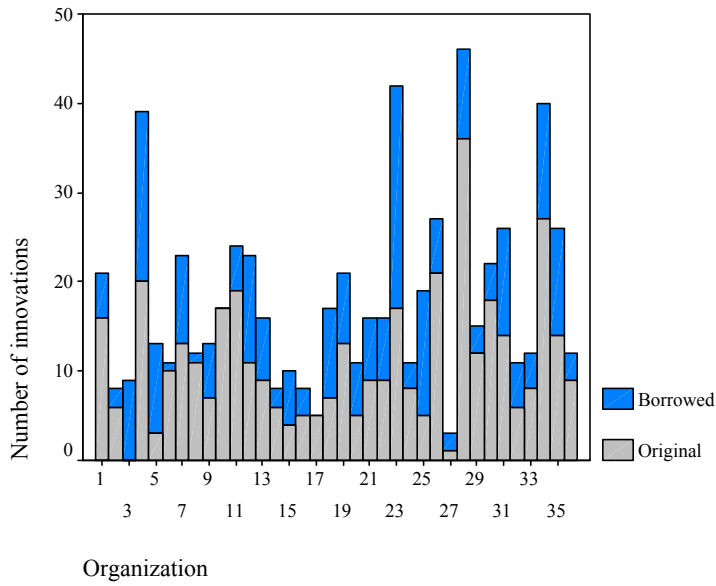


Figure 2. Types of Innovations: Administrative, Technological Product, and Technological Process

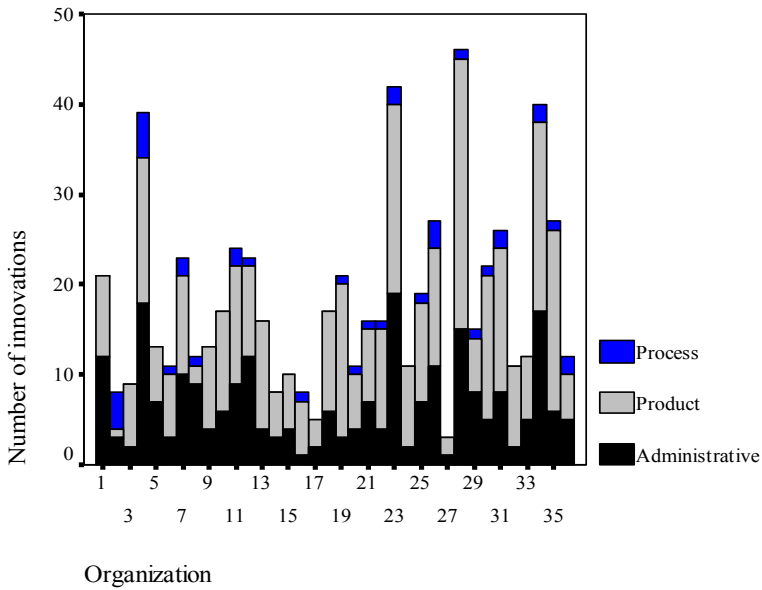


Figure 3. Types of Innovations: Radical and Incremental

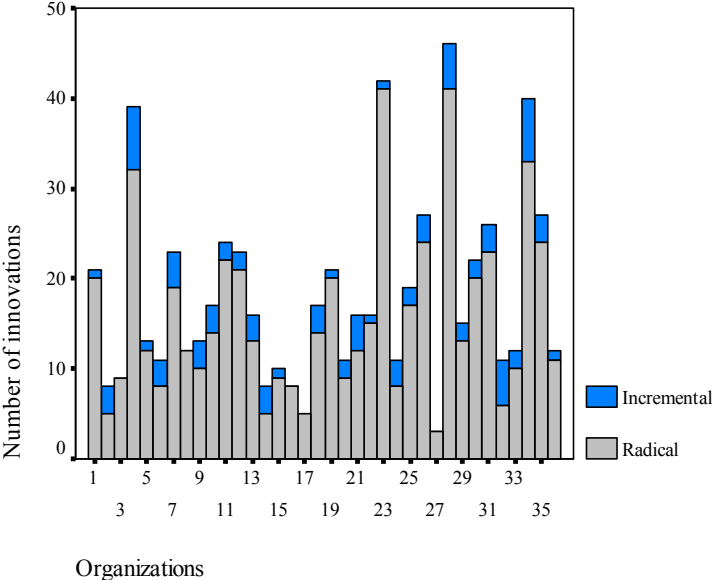


Figure 4. Ratios between the Eigenvalue of the First Factor and the Eigenvalue of the Second Factor

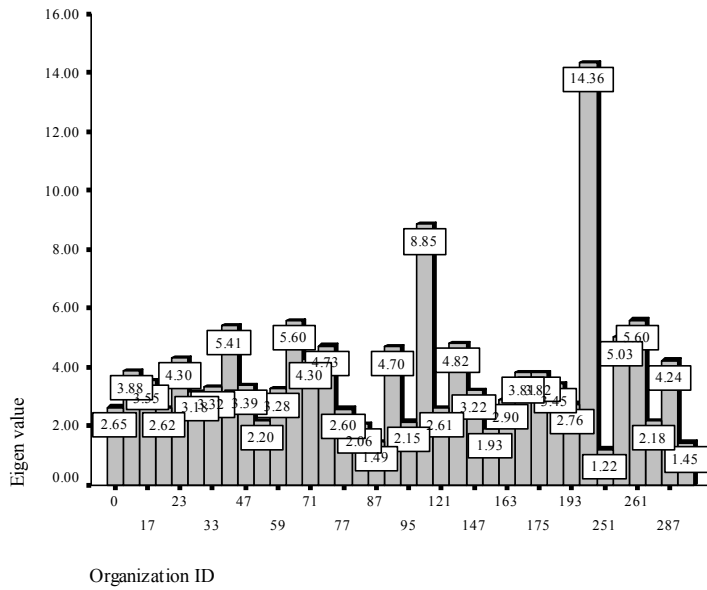


Figure 5. Average Competence Coefficients

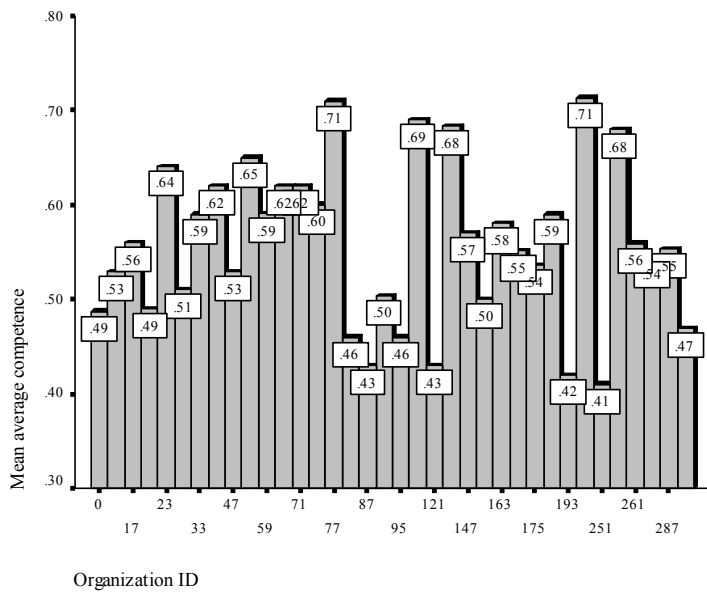


Figure 6. Overall Unifying Culture

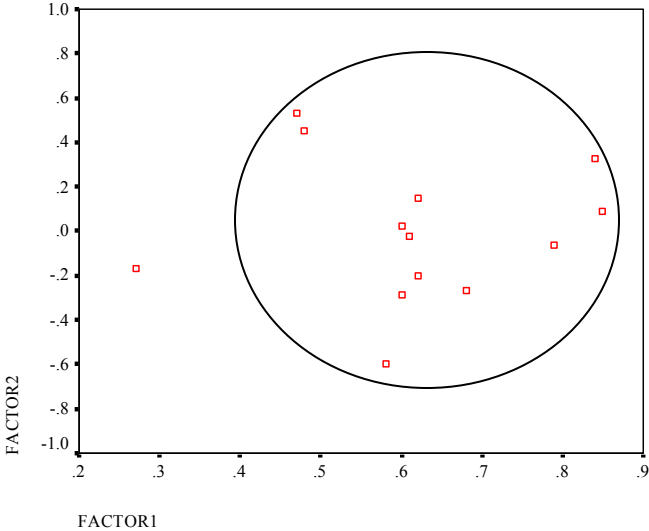


Figure 7. Overall Unifying Culture with a Group of Employees Having Low Competence Coefficients

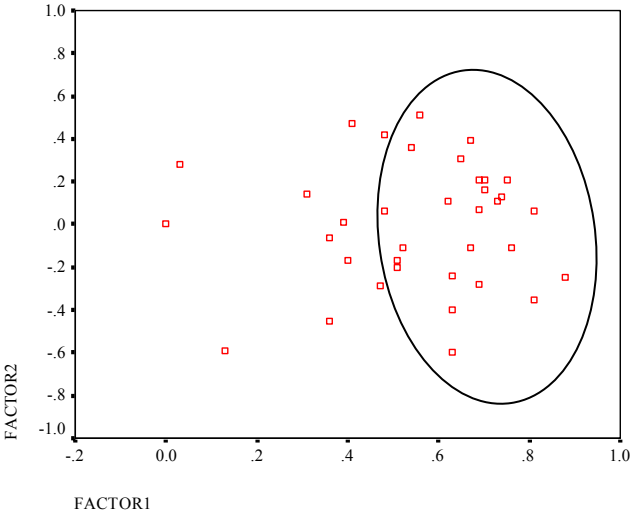


Figure 8. Pluralistic Culture (Consensus within Existing Subcultures and Absence of an Overall Unifying Culture)

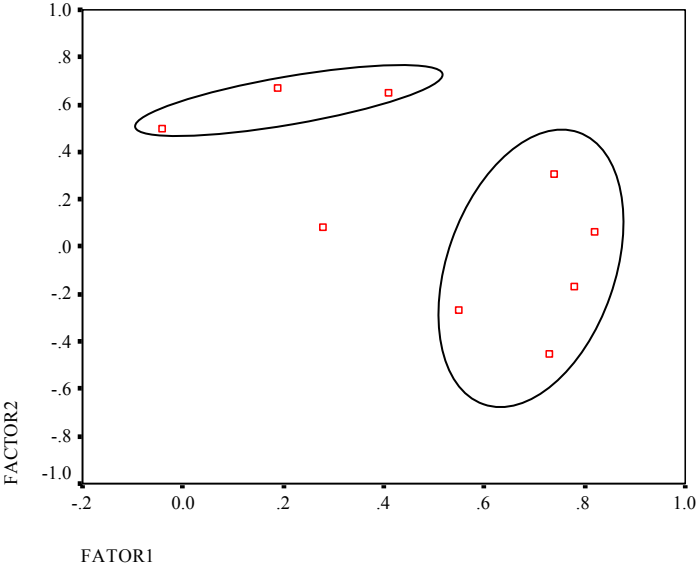


Figure 9. Integrated Pluralistic Culture (Consensus within Existing Subcultures and an Overall Unifying Culture)

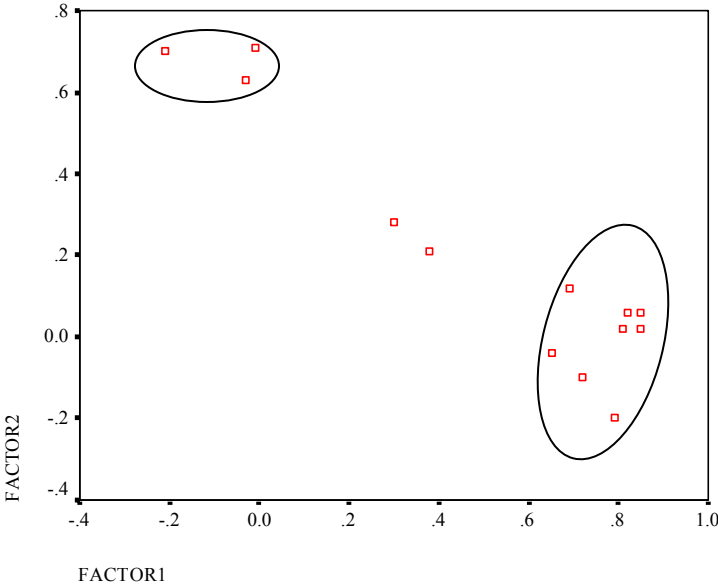


Table 4. Descriptive Statistics and Inter-scale Correlations for Six Cultural Value Dimensions

| Variable | Mean | SD | α | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------------|------|------|----------|---------|---------|---------|--------|-------|------|
| (1) People orientation | 5.52 | .18 | .78 | 1.00 | | | | | |
| (2) Detail orientation | 4.59 | .37 | .79 | -.034 | 1.00 | | | | |
| (3) Outcome orientation | 5.27 | .40 | .80 | .413** | -.370** | 1.00 | | | |
| (4) Stability | 4.98 | .30 | .73 | .137 | .710*** | -.344** | 1.00 | | |
| (5) Team orientation | 5.66 | .19 | .70 | .701*** | -.076 | .625*** | -.059 | 1.00 | |
| (6) Innovation | 4.56 | .279 | .75 | .278 | .359** | -.163 | .386** | -.021 | 1.00 |

** Correlation significant at the .05 level (2-tailed); *** Correlation significant at .01 level (2-tailed)

Figure 10. Scatter-plot with a Fitted Curve (Quadratic Regression Fit Method)

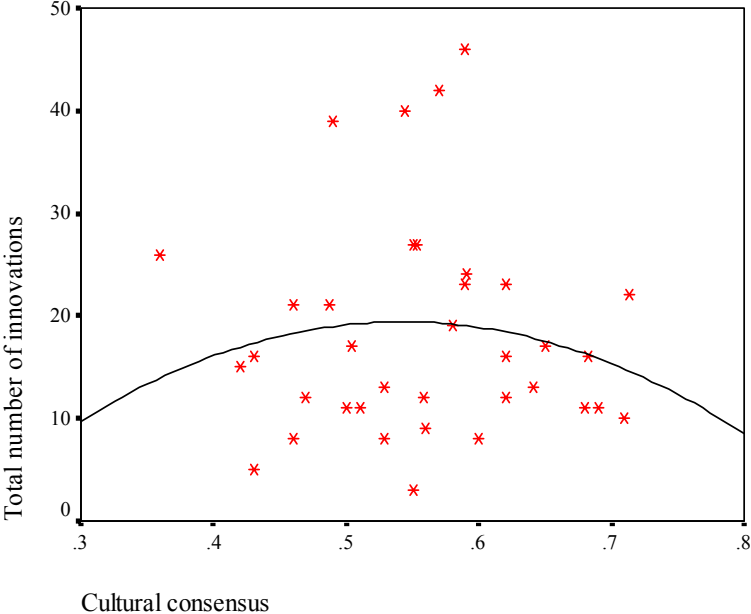


Table 5. Descriptive Statistics for the Alternate Explanatory Variables

| Variable | Mean | SD | Min | Max |
|--|-------|-------|------|------|
| Leadership (total) | 4.34 | .31 | 3.47 | 4.93 |
| Challenging the process | 4.18 | .29 | 3.44 | 4.83 |
| Inspiring shared vision | 4.30 | .38 | 3.44 | 4.92 |
| Enabling others to act | 4.47 | .28 | 3.67 | 4.93 |
| Modeling the way | 4.30 | .32 | 3.61 | 4.97 |
| Encouraging the heart | 4.44 | .39 | 3.17 | 4.97 |
| Size (number of employees and board members) | 31.41 | 18.31 | 9 | 101 |
| Complexity | 8.47 | 7.85 | 2 | 30 |
| Specialization | 5 | 2.99 | 1 | 13 |
| Inter-organizational links | 20.32 | 12.75 | 3 | 61 |
| Formalization | 3.43 | .55 | 2.22 | 4.60 |
| Centralization | 2.15 | .26 | 1.57 | 2.80 |

Table 6. Correlations between Organizational Innovativeness and Alternate Variables

| Variable | Size | Complexity | Specialization | Inter-organizational links | Formalization | Centralization |
|----------------------|---------|------------|----------------|----------------------------|---------------|----------------|
| Perceived Innovation | .072 | .343* | -.026 | -.015 | -.303* | .582*** |
| Innovation total | .583*** | .353* | .497*** | .547*** | .049 | -.098 |
| Original | .463*** | .342* | .520*** | .548*** | .011 | -.147 |
| Borrowed | .513*** | .251 | .278 | .333** | .082 | .012 |
| Administrative | .474*** | .390*** | .401*** | .512*** | .035 | -.107 |
| Product | .562*** | .249 | .479*** | .503*** | .106 | -.077 |
| Process | .324* | .329* | .332* | .160 | -.258 | -.032 |
| Radical | .583*** | .323* | .490*** | .486*** | .046 | -.112 |
| Incremental | .401*** | .349** | .297 | .609*** | .044 | .025 |

*Correlation significant at .10 level (2-tailed); ** Correlation significant at .05 level (2-tailed);

*** Correlation significant at .01 level (2-tailed)

Table 7. Multiple Regression of Organizational Innovation on Independent Variables (Standardized Regression Coefficients)

| Type of Innovation | Model 1 | Model 2 | Model 3 |
|-------------------------------------|---------|---------|---------|
| 1. Innovation total | | | |
| Cultural Consensus | -.088 | .042 | -.083 |
| Team orientation | | .533 | .371 |
| Innovation | | .232 | .138 |
| Detail orientation | | .202 | .052 |
| Stability | | .107 | .036 |
| People orientation | | -.559 | .180 |
| Outcome orientation | | .014 | -.248 |
| Inter-organizational links | | | .465** |
| Complexity | | | .087 |
| Specialization | | | .446 |
| Size | | | .164 |
| Leadership total | | | .382* |
| Formalization | | | .435* |
| Centralization | | | -.282 |
| R | .088 | .475 | .909** |
| R ² | .008 | .226 | .826 |
| 2. Administrative innovation | | | |
| Cultural Consensus | -.029 | .073 | -.026 |
| Team orientation | | .719 | .654 |
| Innovation | | .303 | .368 |
| Detail orientation | | .143 | -.125 |
| Stability | | .070 | -.032 |
| People orientation | | -.586 | .018 |
| Outcome orientation | | -.039 | -.359 |
| Inter-organizational links | | | .468* |
| Complexity | | | -.005 |
| Specialization | | | .413 |
| Size | | | .134 |
| Leadership total | | | .298 |
| Formalization | | | .247 |
| Centralization | | | -.360 |
| R | .029 | .509 | .840 |
| R ² | .001 | .840 | .706* |

| Type of Innovation | Model 1 | Model 2 | Model 3 |
|------------------------------|---------|---------|---------|
| 3. Product innovation | | | |
| Cultural Consensus | -.082 | .046 | -.082 |
| Team orientation | | .200 | .002 |
| Innovation | | .157 | -.061 |
| Detail orientation | | .226 | .181 |
| Stability | | .112 | .096 |
| People orientation | | -.453 | .285 |
| Outcome orientation | | .099 | -.091 |
| Inter-organizational links | | | .425* |
| Complexity | | | .135 |
| Specialization | | | .406 |
| Size | | | .126 |
| Leadership total | | | .406 |
| Formalization | | | .543* |
| Centralization | | | -.184 |
| R | .082 | .430 | .863** |
| R ² | .007 | .185 | .744 |
| 4. Process innovation | | | |
| Cultural Consensus | -.289 | -.167 | -.256 |
| Team orientation | | .938* | .720* |
| Innovation | | .066 | .048 |
| Detail orientation | | .105 | .073 |
| Stability | | .126 | -.033 |
| People orientation | | -.385 | .118 |
| Outcome orientation | | -.238 | -.339 |
| Inter-organizational links | | | .133 |
| Complexity | | | .134 |
| Specialization | | | .306 |
| Size | | | .323 |
| Leadership total | | | .194 |
| Formalization | | | .181 |
| Centralization | | | -.152 |
| R | .289 | .604 | .876** |
| R ² | .084 | .365 | .767 |

| Type of Innovation | Model 1 | Model 2 | Model 3 |
|-------------------------------|---------|---------|---------|
| 5. Original innovation | | | |
| Cultural Consensus | -.144 | .078 | -.087 |
| Team orientation | | .458 | .301 |
| Innovation | | .178 | .177 |
| Detail orientation | | .243 | -.056 |
| Stability | | .247 | .094 |
| People orientation | | -.533 | .187 |
| Outcome orientation | | -.091 | -.450 |
| Inter-organizational links | | | .539** |
| Complexity | | | -.092 |
| Specialization | | | .700** |
| Size | | | -.038 |
| Leadership total | | | .491** |
| Formalization | | | .299 |
| Centralization | | | -.328 |
| R | .144 | .543 | .900** |
| R ² | .021 | .295 | .811 |

** p<.05; * p<.10