MOVING TOWARD IMPROVED ACQUISITION OUTCOMES:
THE INTERRELATIONSHIPS BETWEEN CULTURE, COMMITMENT, AND LEADERSHIP

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The impact of organizational culture, management leadership style, and employee commitment on organizational outcomes has long been studied, but no clear answer exists for which concepts most affect acquisition outcomes and increase organizational productivity. A key contribution of this study is the notion that they are interrelated and may work synergistically in improving acquisition outcomes. The author claims that the interaction of these elements, when combined, may produce a total effect that is greater than the sum of their individual elements. A conceptual model was identified and used as the foundation for building hypotheses. Structural Equation Modeling was used to analyze the data gathered, and a path diagram was developed for this study using Analysis of Moment Structures (AMOS).

image designed by Harambee Dennis »

improved acquisition outcomes

culture   Taylor's Principles

orga-   nizational   Leader-
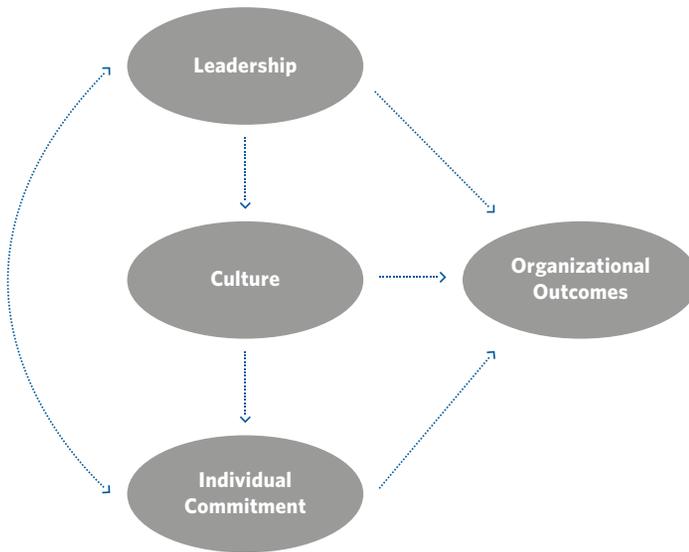
Commit-   ment   ship

Early studies of organizational productivity generally begin with Frederick W. Taylor's (1911) theories of scientific management and, more specifically, division of labor. Taylor's theories included the belief that management's responsibility was to plan work, and workers' responsibility was to perform the assigned work tasks. These principles were implemented in many factories and often increased productivity; however, they also increased the monotony of work and subsequently did little to improve employee commitment or morale. While Taylor may have had the right idea for the time, it can be argued that he did not have the correct approach for today's environment. The lack of worker input and involvement held over as an artifact of scientific management added to worker frustration. Taylor's theory did not take into account external factors such as the leadership style exhibited by management, relationships among the workers, the culture of the organization, the motivation of the workers, or their input. Neither did he consider the differing personalities of workers and managers.

Taylor's principles were developed in the late 1800s, but are still being practiced today. Some managers are working to improve outcomes and boost productivity without realizing that they may be doing just the opposite. If, in an effort to boost organizational outcomes, increase revenue, improve customer service, and drive increased productivity, they constrain their employees, do not seek their input, and consequently stifle creative problem solving, their methods are misguided. Numerous external factors are overlooked by managers who see harder or longer working employees as the only avenue to improvements to efficiency and productivity.

Conceptual Model

The conceptual model for this study is presented in Figure 1. This model shows antecedents of factors that have been found to affect organizational outcomes. Arrows are shown to depict these relationships. Relationships exist between leadership style and culture, suggesting that a manager's leadership affects an organization's culture; between culture and commitment, suggesting that the culture of an organization affects an employee's level of commitment; and between leadership style and commitment, suggesting that a manager's leadership style directly affects an employee's level of commitment to the organization—and an employee's level of commitment affects a leader's style. Further, the belief is that all these concepts affect outcomes. As a result of this model, the following hypotheses were studied.

FIGURE 1. CONCEPTUAL MODEL

Hypothesis No. 1
No significant relationship exists between employees' individual commitment and culture.

Hypothesis No. 2
No significant relationship exists between employees' individual commitment and management leadership style.

Hypothesis No. 3
No significant relationship exists between employees' perception of management leadership style and culture.

Hypothesis No. 4
No significant relationship exists between employees' perception of management leadership style and organizational commitment.

Hypothesis No. 5
No significant relationship exists between employees' perception of organizational culture and organizational commitment.

Hypothesis No. 6
No significant relationship exists between employees' perception of organizational culture and management leadership style.

Definition of Terms

To situate this study, an explanation of the terms that are central to this study is needed. The following definitions were used:

Culture

Wallach (1983, p. 29) defined culture as: the shared understanding of an organization's employees. Wallach labeled three separate organizational culture types as *bureaucratic, innovative,* and *supportive*. These types can be distinguished as (a) bureaucratic—structured, ordered, regulated, and power-oriented; (b) innovative—results- and risk-oriented; and (c) supportive—collaborative and relationships-oriented.

Leadership

For purposes of this study, Bass's (1985) definition of leadership—the observed effect of one individual's ability to change other people's behaviors by altering their motivations—will be used. Leaders are characterized as one of three types: (a) *transactional*—one who uses rewards as a control mechanism to externally motivate; (b) *transformational*—one who uses rewards to increase commitment and internally motivate; or (c) *laissez-faire*—one who offers no feedback or support.

Commitment

The definition of commitment that was used is: the strength of an individual's identification with and involvement in a particular organization...characterized by three factors: (a) a strong belief in, and acceptance of, the organization's goals and values; (b) a readiness to exert considerable effort on behalf of the organization; and (c) a strong desire to remain a member of the organization (Mowday, Porter, & Steers, 1982, p. 27).

Outcomes

Organizational outcomes are made up of subsets of performance areas, which are attached to each other and that the organization has decided to maximize, which then form a greater system or process (Walker, 2000, p. 1).

Research Methodology

The Organization

The organization used in this study was a large, high-technology organization offering services to the aerospace, energy, and environmental industries. The total population in the business unit was

725 individuals. The pilot survey sample consisted of 38 individuals, and the final survey sample consisted of 164. Employees used in the pilot study did not participate in the final survey.

Survey Instruments

Pre-established surveys were used to obtain measures of organizational culture, management leadership style, and organizational commitment. An additional questionnaire was developed to gather organizational outcomes from managers and top executives.

Culture. Wallach's (1983) Organizational Culture Index (OCI) was used to assess the culture of the organization. The descriptive items of the survey are shown in Table 1. Wallach identified these culture indicators as bureaucratic, innovative, and supportive. The OCI was

TABLE 1. ORGANIZATIONAL CULTURE INDEX

risk taking	I
results-oriented	I
creative	I
pressurized	I
stimulating	I
challenging	I
enterprising	I
driving	I
collaborative	S
trusting	S
safe	S
equitable	S
personal freedom	S
relationships-oriented	S
encouraging	S
sociable	S
structured	B
ordered	B
procedural	B
hierarchical	B
regulated	B
established, solid	B
cautious	B
power-oriented	B

(I)nnovative; (S)upportive; (B)ureaucratic

given to each employee and section manager to rate the culture in their section as well as the division manager or deputy to rate the culture in each section under their control.

Commitment. Mowday, Porter, and Steers' (1982) Organizational Commitment Questionnaire (OCQ) was used to assess the commitment level of the employee. The questionnaire measured motivation, intent to remain, acceptance of goals, and willingness to work hard. An OCQ is classified as an attitudinal measure of organizational commitment.

Leadership. Bass and Avolio's Multifactor Leadership Questionnaire (MLQ) 5X Short Form (1994) was designed for analyzing leaders' self-reported leadership styles—transformational, transactional, or laissez-faire—as well as employees' perception of leaders' styles and commitment to organizational outcomes.

Organizational Outcomes. Management was asked questions designed to measure organizational outcomes. Table 2 lists the questions. These questions were mutually agreed upon by the researcher and the management of the organization. Because of privacy concerns, the organization was not in favor of a more extensive list of questions recommended by the researcher.

TABLE 2. ORGANIZATIONAL OUTCOMES

1.	Percentage of tasks completed on schedule
2.	Average number of critical events found during design review
	2a. Additional time added to schedule as a result?
	2b. Significant budget increase as a result?
	2c. Personnel additions as a result?
3.	Number of proposal iterations
4.	In the past year, how many employees have left the Section?
5.	In the past year, how many employees were replaced in the Section?
6.	In the past year, how many employees were added to the Section?

Reliability and Unidimensionality. A factor analysis was performed on each questionnaire to analyze interrelationships among the questions as well as to explain the variables in terms of their underlying common factors. As a result, a pilot study and subsequent factor analysis for each questionnaire resulted in the elimination of variables that either seemed inconsistent with related responses or appeared to be ambiguous to those taking the survey. Throughout

FIGURE 2. COMMITMENT SCREE PLOT
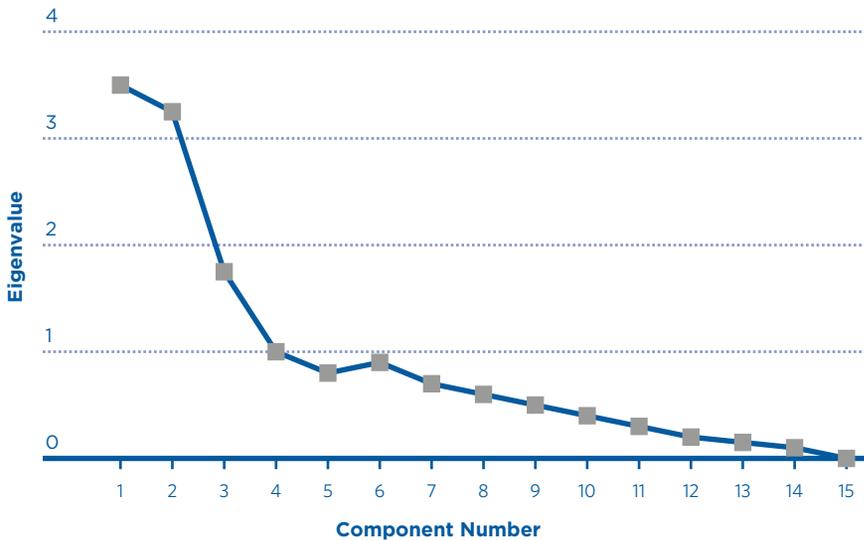
this analysis, validity values less than 0.6 were eliminated. During the analysis, initial results did not provide a clear, simple interpretation of the data. As a result of these issues, a Varimax rotation[1] was applied and several iterations were run after eliminating variables that did not meet the loading threshold. All of the following results show final computational data after rotations are applied. For each analysis, the √'s in the far right column denote variables that should not be discarded since they load on only one factor and are above the 0.6 validity threshold. To support the number of factors for each analysis, the Cattell (1966) Scree Test was also used.

Commitment Factor Analysis. Table 3 shows the commitment factor analysis output. All of the variables loaded on separate factors with

TABLE 3. COMMITMENT FACTOR ANALYSIS—FINAL

	Component		
	1	**2**	**3**
comm1	.957	.238	-.091
comm2	-.319	.909	-.182
comm5	.049	.620	.679
comm6	-.319	.909	-.182
comm8	.957	.238	-.091
comm12	.454	-.183	.592
comm13	-.312	.164	.602
comm14	.957	.238	-.091

a clear division among them. With the exception of comm12, all of the variables exceeded the threshold value. However, comm12 was not eliminated since it was within a few thousandths of the 0.6 threshold value. As a result, these variables were used in the final statistical analysis because of their high loading and significance to the corresponding factor as highlighted in the table.

From the commitment scree plot in Figure 2, it can be seen that the first three factors are worth retaining in the analysis. This is consistent with the number of factors in the final analysis results in Table 3.

Culture Factor Analysis. Table 4 shows the culture factor analysis output. From the culture scree plot in Figure 3, it can be seen that the first four factors are worth retaining in the analysis. This was one factor more than the number of factors determined from the final analysis results in Table 4, which showed only three factors being retained.

TABLE 4. CULTURE FACTOR ANALYSIS—FINAL

	Component		
	1	2	3
cult2	.678	-.200	-.150
cult7	.700	-.071	-.458
cult8	.446	-.071	.706
cult10	.431	.621	.045
cult13	-.483	-.277	.596
cult14	-.415	.664	.439
cult16	.625	-.542	.046
cult22	.509	.649	-.219

Leadership Factor Analysis. Table 5 shows the initial leadership factor analysis output. These four variables were used in the final statistical analysis. From the leadership scree plot in Figure 4, it can be seen that the first four factors were worth retaining in the analysis. This was inconsistent with the number of factors in the final analysis results in Table 5, which showed only one factor being retained. This caused some concern, but the scree test could be in error since it suffers from subjectivity and ambiguity (Hayton, Allen, & Scarpello, 2004).

Of the many coefficients, Cronbach's alpha (1951) is probably the best known. Cronbach's alpha is regarded as the lower bound on reliability for a set of congeneric measures. It assumes each of the items within the scale contributes equally to the underlying trait.
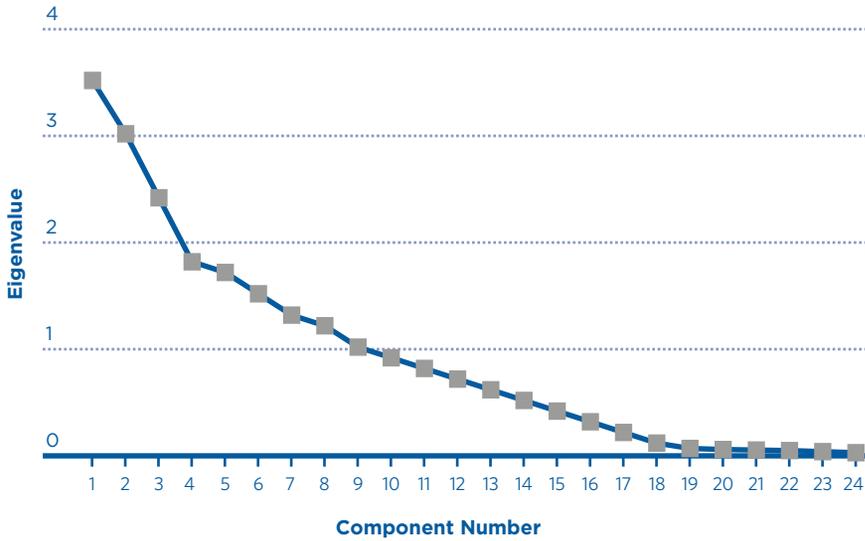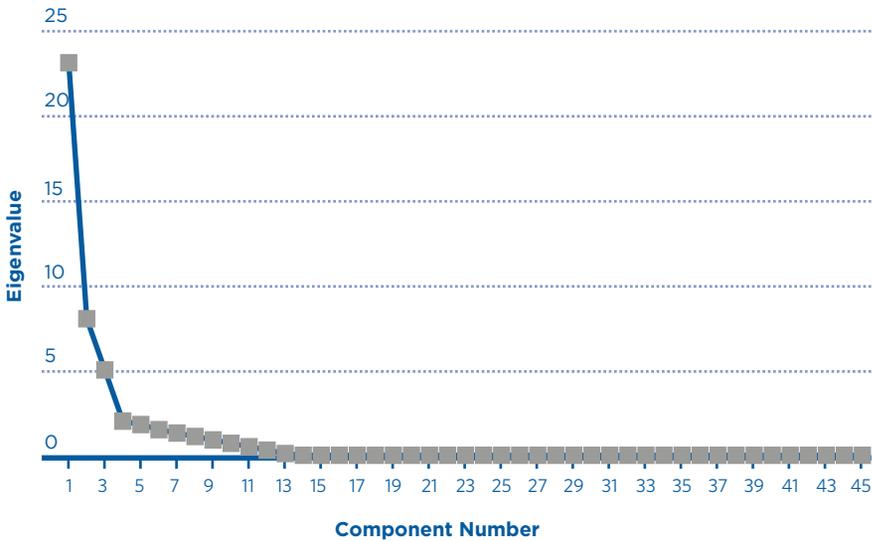
FIGURE 3. CULTURE SCREE PLOT

TABLE 5. LEADERSHIP FACTOR ANALYSIS—FINAL

lead5	.873
lead10	.836
lead15	.876
lead22	.923

FIGURE 4. LEADERSHIP SCREE PLOT

The final Cronbach alpha values for each construct in this study are reported in Table 6. The measures were relatively homogeneous for the construct they purport to measure. Typically, reliabilities greater than 0.7 are considered adequate for measurement analysis (Nunnally, 1978). However, while the bureaucratic culture alpha value was reasonably low, it was accepted since attempts to increase its value reduced the alpha values of the other factors. In the end, the values shown reflect the most stable values.

TABLE 6. SURVEY INSTRUMENT ALPHA VALUES

| Factor	Number of Items	Alpha
Culture (Bureaucratic)	8	0.513
Culture (Innovative)	8	0.695
Culture (Supportive)	8	0.811
Commitment	8	0.64
Leadership	4	0.90

Structural Equation Modeling

This study used structural equation modeling for statistical analysis of data. Structural equation modeling (SEM) is a statistical technique that integrates path and factor analysis. Path analysis, a subset of SEM, deals only with measured variables, and is the statistical technique used to examine causal relationships between two or more variables.

After a thorough review of the literature, it was determined that leadership, culture, and individual commitment all have a direct effect on organizational outcomes. A more extensive literature review also revealed that leadership may affect culture and commitment while culture may only affect commitment. Figure 5 shows the subsequent path diagram for these relationships that were created using Analysis of Moment Structures, or AMOS.[2] As required by SEM, the measured variables are indicated by rectangles, latent variables by ellipses, and error terms by circles. The error terms represent residual variances within variables not accounted for by pathways hypothesized in the model.

With six connections and using a ratio of 20:1 as a guide, at least 120 samples were needed to adequately support the statistical precision of the results. The final results for this study contained 164 samples.

FIGURE 5. AMOS PATH DIAGRAM
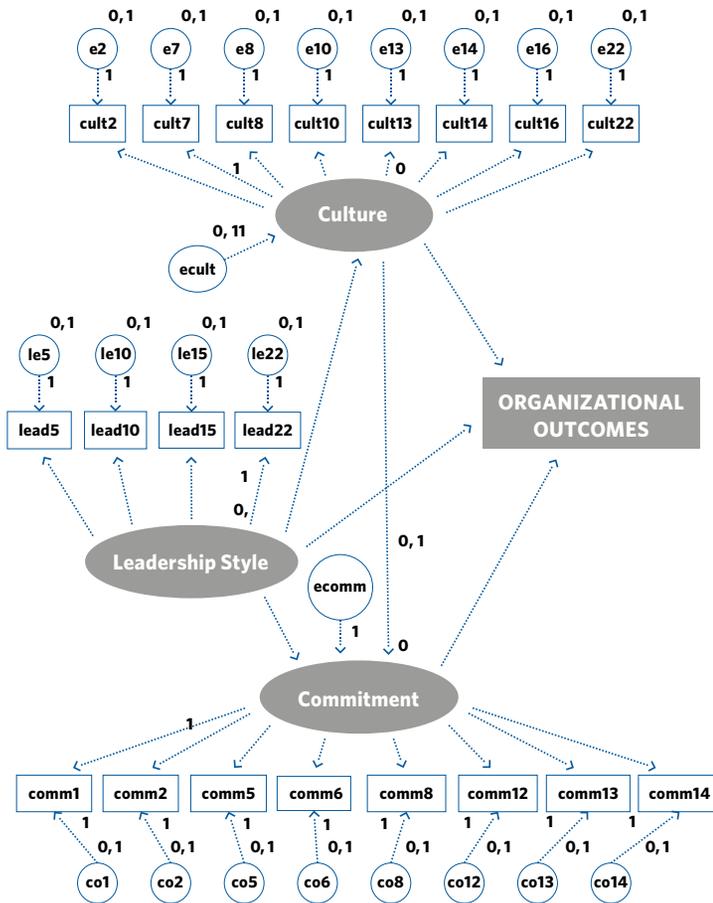
Results

Analysis

Numerous tests exist for assessing how well a model matches the observed data. Chi-square is the most common goodness-of-fit measure. In a full model, there is a direct path from each variable to each other variable. When one or more paths are missing, a reduced model is obtained. In this study, an analysis was performed to see which model is better.

The Chi-square value is 72.2 with 44 degrees of freedom and a p-value equal to 0.005. Since this p-value does not exceed the alpha value of 0.05, the null hypothesis is rejected, indicating that the model does not fit the data adequately.

It should be noted, however, that problems with Chi-square are known to exist. The main drawback with the Chi-square test is that it is sensitive to sample size, becoming more and more likely to reject the null hypothesis as the sample size increases. This is

because as the sample size increases, the Chi-square statistic has a tendency to indicate a significant probability level whereas a decrease in the sample size results in a commensurate decrease in the statistic to nonsignificant levels (Schumacker & Lomax, 2004). Therefore, additional testing was done before drawing conclusions on model fit. One corroborating test of model fit is provided by the Root Mean Square Error of Approximation (RMSEA) statistic—a measure of fit introduced by Steiger and Lind (1980). The RMSEA estimates lack of fit compared to the full model. RMSEA differs from the Chi-square test in that it is sensitive to the number of parameters estimated and relatively insensitive to sample size. The *AMOS 4.0 User's Guide* (Arbuckle, 1999) suggests that an RMSEA value of 0.05 or less indicates a close fit of the model, and an adequate fit exists if RMSEA is less than or equal to 0.08. MacCallum, Browne, and Sugawara (1996) added that RMSEA values ranging from 0.08 to 0.10 indicate mediocre fit, and those greater than 0.10 indicate poor fit. LO 90 and HI 90 values, as shown in Table 7, indicate 90 percent confidence limits on the coefficient while PCLOSE[3] tests the null hypothesis that RMSEA is no greater than 0.05. MacCallum et al. (1996) contend that when a small RMSEA exists, with a wide confidence interval, it can be concluded that the estimated discrepancy value is quite imprecise. This then negates any possibility of determining an accurate degree of fit in the population. In contrast, a very narrow confidence interval would argue for good precision of the RMSEA value in reflecting model fit in the population (MacCallum et al., 1996).

TABLE 7. RMSEA (INITIAL)

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.063	0.035	0.088	0.204
Independence model	0.322	0.305	0.34	0

As noted earlier, PCLOSE is a statistical significance test of the RMSEA and measures the *p* value by testing the null that RMSEA is no greater than 0.05. As shown in Table 7, the RMSEA value of this model is 0.063, indicating that the estimate is adequate. Evidence affirms that the estimate is correct since PCLOSE is 0.204, which is greater than the 0.05 alpha value. Some experts suggest that the PCLOSE value should be greater than 0.5; however, the 0.209 value was accepted since it is greater than the alpha value. As a result, the null hypothesis was not rejected, RMSEA is greater than 0.05, and thus it was concluded that the model fits the data adequately. Additionally, the 90 percent confidence of the RMSEA is within the bounds of 0.035 and 0.088. The upper bound of the confidence

interval was fractionally higher than the suggested cutoff of 0.08, but this was considered mediocre according to MacCallum et al. (1996). Overall, given that (a) the RMSEA point estimate is adequate, i.e., 0.063 < 0.08; (b) the RMSEA point estimate is within the 90 percent confidence interval; and (c) the probability value associated with this test of close fit is PCLOSE = 0.204, it was concluded that the model provides an adequate fit of the data.

To establish greater confidence, an additional goodness-of-fit test was conducted. The Expected Cross-Validation Index (ECVI) is an approximation of the goodness-of-fit that the estimated model would achieve in another sample of the same size. It takes into account the actual sample size and the difference that could be expected in another sample. The ECVI also takes into account the number of estimated parameters for both the structural and measurement models. Application of the ECVI assumes a comparison of models whereby an ECVI index is computed for each model, and then all ECVI values are placed in rank order. The model having the smallest ECVI value exhibits the greatest potential for replication (Byrne, 2001).

In assessing the ECVI results for the model presented here (the default model), as shown in Table 8 the ECVI value of 0.843 for the initial model is compared with the saturated model (ECVI = 0.939) and the independence model (ECVI = 6.313). A saturated model perfectly fits the data because it has as many parameters as there are values to be fit. An independence model on the other hand is one in which two (or more) random variables are independent of one another. Given the lower ECVI value for the default model, compared with both the independence and saturated models, the conclusion is that it represents the best fit to the data. The precision of this estimated ECVI value can also be taken into account by examining the confidence intervals, which range from 0.724 to 1.009. Taken together, these results suggest that the model provides a good fit and represents a reasonable approximation to the population. This conclusion supports the findings of the RMSEA.

TABLE 8. EXPECTED CROSS-VALIDATION INDEX (INITIAL)

Model	ECVI	LO 90	HI 90	MECVI
Default model	0.843	0.724	1.009	0.874
Saturated model	0.939	0.939	0.939	1.013
Independence model	6.313	5.713	6.959	6.335

Next, we examined the reliability of the measures. Bollen (1989) suggests that the Squared Multiple Correlation is an adequate measure for doing so. Fornell and Larcker (1981) suggest that the

TABLE 9. SQUARED MULTIPLE CORRELATIONS (INITIAL)

	Estimate
leadership	0
culture	0
commitment	0.089
comm6	0.928
cult9	-0.345
comm12	0.165
lead22	0.996
lead5	0.772
org outcomes	0.768
comm7	0.351
comm4	0.274
cult11	0.352
cult1	0.717
lead15	0.902
lead10	0.785

magnitude of this coefficient should be greater than 0.5, which implies that more than 50 percent of the variance of the item is related to what is being measured. The squared multiple correlation coefficients are shown in Table 9. The coefficients that meet the 0.5 threshold recommended by Fornell and Larcker (1981) are shown as well as the coefficients that are below the threshold. The coefficients below the threshold were left in the model because removing them caused model instability in other significance tests. Their inclusion in the model allowed for the best fit.

Next, we examined the regression weights to determine if the coefficients are significant. The regression coefficients represent the amount of change in the dependent variable for each one unit of change in the variable predicting it. In Table 10, culture increases 0.013 units for each 1.0 unit increase in leadership. The table displays the estimate, its standard error (S.E.), and the estimate divided by the standard error (C.R.). The p-value tests the null hypothesis that the covariance between two variables is zero in the population from which this sample was drawn.

The regression coefficients in this model were found to be significant with the exception of the culture-leadership and commitment-culture relationships. Of greatest concern was the culture-leadership relationship p-value of 0.868, which is far beyond the 0.05 alpha level. Numerous model revisions were performed in an effort to reduce this value with no success. However, after further

TABLE 10. REGRESSION WEIGHTS (INITIAL)

			Estimate	S.E.	C.R.	P	Label
culture	←	Leadership	0.013	0.076	0.167	0.868	par_10
commitment	←	Culture	-0.172	0.1	-1.724	0.085	par_9
commitment	←	Leadership	0.264	0.099	2.66	0.008	par_11
lead10	←	Leadership	0.889	0.045	19.785	***	par_1
lead15	←	Leadership	1.073	0.035	30.283	***	par_2
cult1	←	Culture	0.598	0.078	7.638	***	par_3
cult11	←	Culture	0.374	0.057	6.579	***	par_4
comm4	←	Commitment	0.581	0.082	7.101	***	par_5
comm7	←	Commitment	0.557	0.072	7.733	***	par_6
org outcomes	←	Leadership	1				
org outcomes	←	Commitment	1				
org outcomes	←	Culture	1				
lead5	←	Leadership	0.894	0.047	19.067	***	par_7
lead22	←	Leadership	1				
comm12	←	Commitment	0.28	0.053	5.304	***	par_8
cult9	←	Culture	1				
comm6	←	Errcomm6	0.291	0.148	1.969	0.049	par_13
comm6	←	Commitment	1				

research, a change to the model was considered. It was determined that the link between culture and leadership be reversed, implying that the commitment level of employees affects the leadership style that the manager portrays rather than management leadership style affecting the commitment of the employees as the literature suggests. In an attempt to stabilize the model, this change was reluctantly made. The path model was changed to reflect this directional change in the commitment-leadership relationship, as shown in Figure 6. The revised model was re-run, and the new regression weights were analyzed.

As shown in Table 11, the regression results in the revised model show a drastically reduced p-value of the commitment-leadership relationship to far below the alpha level. However, the culture-leadership relationship increased to 0.461, which was much higher than the previous value of 0.085. As a result, the relationship became nonsignificant. After several modifications and re-analyses, it was finally concluded that this refined model would provide the most stable results. The significant paths are shown in Figure 7. To verify this revised model, all of the previous analyses were redone using this revised model.

FIGURE 6. AMOS PATH DIAGRAM (REVISED)
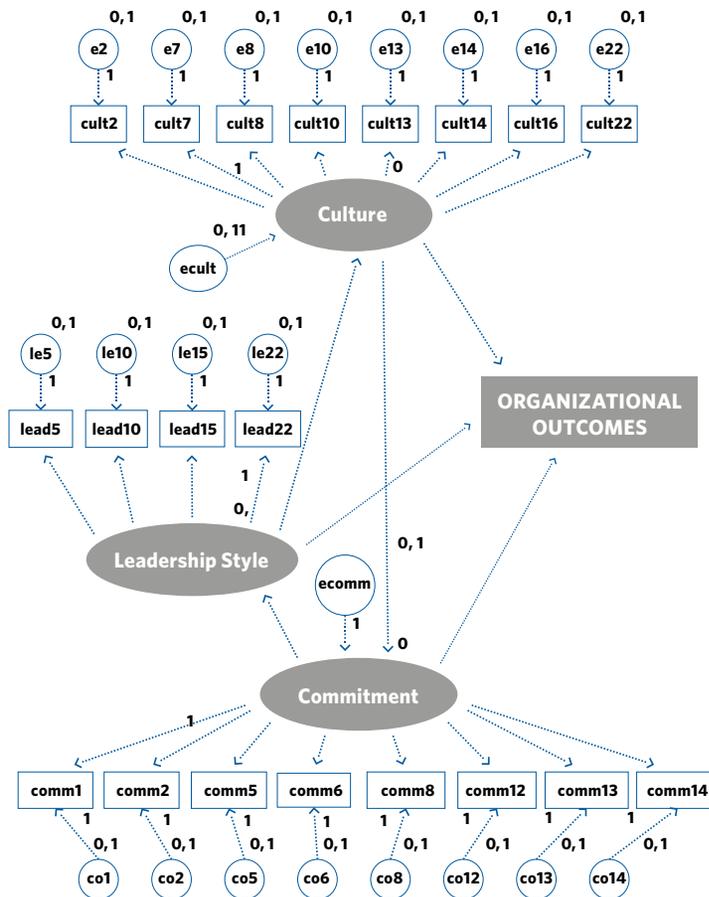
The Chi-square value was reduced from 72.189 in the initial model to 68.529 and the probability level from 0.005 to 0.01. Since this *p*-value does not exceed the alpha value of 0.05, the null hypothesis is rejected. The conclusion is the revised model does not provide an adequate fit of the data. This same conclusion was reached in the initial model and, once again, additional tests were conducted to verify model fit as was done for the initial model.

As shown in Table 12, the RMSEA value in the revised model was reduced from 0.063 to 0.058, which is slightly above the 0.05 criterion for a close fit. Thus, the value was considered to be adequate and provided greater confidence that this estimate is correct since PCLOSE is 0.288. The hypothesis was not rejected since the *p*-value is greater than the 0.05 level of confidence. It is concluded that RMSEA is greater than 0.05. It is concluded that the model fits the data adequately. Additionally, the 90 percent confidence of the RMSEA is within the upper bounds of 0.029 and 0.084. The upper bound of the confidence interval is fractionally higher than

TABLE 11. REGRESSION WEIGHTS (REVISED MODEL)

			Estimate	S.E.	C.R.	P	Label
commitment	←	leadership	0.269	0.098	2.73	0.006	par_10
culture	←	leadership	0.056	0.076	0.737	0.461	par_9
culture	←	commitment	-0.159	0.06	-2.637	0.008	par_13
lead10	←	leadership	0.889	0.045	19.778	***	par_1
lead15	←	leadership	1.072	0.035	30.273	***	par_2
cult1	←	culture	0.599	0.079	7.567	***	par_3
cult11	←	culture	0.369	0.057	6.502	***	par_4
comm4	←	commitment	0.578	0.081	7.109	***	par_5
comm7	←	commitment	0.553	0.071	7.752	***	par_6
org outcomes	←	leadership	1				
org outcomes	←	commitment	1				
org outcomes	←	culture	1				
lead5	←	leadership	0.894	0.047	19.06	***	par_7
comm12	←	commitment	0.278	0.052	5.309	***	par_8
cult9	←	culture	1				
comm6	←	errcomm6	0.275	0.15	1.83	0.067	par_12
comm6	←	commitment	1				
lead22	←	leadership	1				

FIGURE 7. SIGNIFICANT PATHS
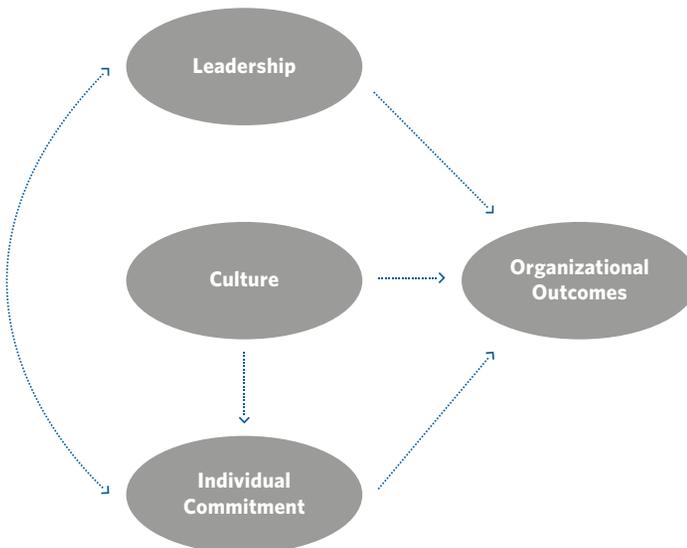
TABLE 12. RMSEA (REVISED MODEL)

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.058	0.029	0.084	0.288
Independence model	0.322	0.305	0.34	0

TABLE 13. SQUARED MULTIPLE CORRELATIONS (REVISED MODEL)

	Estimate
leadership	0
commitment	0.067
culture	0.025
lead22	0.996
comm6	0.934
cult9	-0.362
comm12	0.16
lead5	0.772
org outcomes	0.77
comm7	0.341
comm4	0.267
cult11	0.351
cult1	0.732
lead15	0.902
lead10	0.785

the suggested cutoff of 0.08—considered mediocre according to MacCallum et al. (1996). Given that (a) the RMSEA point estimate is 0.058 < 0.08, (b) the RMSEA point estimate is within the 90 percent confidence interval, and (c) the probability value associated with this test of close fit is PCLOSE = 0.288, the conclusion is that the initially hypothesized model provides an adequate fit of the data.

The Squared Multiple Correlation values in Table 13 of the revised model noted minor changes. Some coefficients meet the standard set by Fornell and Larcker (1981) while others were below the 0.5 threshold, but were left in the model because removing them caused model instability in other significant tests. Their inclusion in the model allowed for the best fit.

Discussion and Conclusions

The first significant relationship among the data collected for this study demonstrated that leadership does in fact affect com-

mitment. It was also determined that commitment affects culture. Both of these conclusions are not surprising since they support the findings in the research literature, which demonstrated that there is a link between these concepts. The effects were both positive and significant implying that the leader has the ability to influence the commitment of the employees and that the commitment level of the employees affects the culture of the organization. The use of regression analysis supported these findings.

Leadership, however, was found to have no significant impact on culture. This was unexpected. Based on the literature, it was believed that leadership styles could have a significant effect on establishing the culture of an organization because of their perceived interconnection. As a result, further study is needed to determine the accuracy of this conclusion, necessitating the need to check to see if these results are consistent for broader ranges of conditions.

Managerial Implications

The implications for managers are many. A common assumption is that the culture within the organization is directly linked to the outcomes of an organization, and that changes to culture traits will impact effectiveness. However, this study provided some preliminary evidence that this presumption alone may not be true. Evidence suggests that different cultures that are sensitive to either external conditions or internal conditions may have a different impact on organizational outcomes. An externally focused culture

type impacts revenue, sales growth, and market share. It is a culture that brings together the elements of mission and adaptability. It is goal sensitive, but it is also ready to quickly react to market or consumer fluctuations (Hastings & Potter, 2004). In an internally focused culture, outcomes are significantly influenced by the extent to which a leader is supportive of followers and includes followers in decision-making processes. Managers must be aware of this and manage both environments effectively to see outcome improvements.

Although the results of this study do not confirm an association between leadership and culture, the literature shows that such a relationship does in fact exist and that associations between leadership styles and organizational outcomes are mediated by some form of organizational culture. In agreement with the literature findings, the author contends that potential solutions to the difficulties associated with changing organizational culture may involve focusing on leadership style. While managing culture is at best difficult, changes to leadership styles may allow changes to culture to be more easily achieved. Thus, an effective manager can influence and manage culture since the impact of poor leadership skills demonstrated by leaders will have an effect on organizational outcomes and subsequently culture. Thus, training in organizational leadership is needed. Leadership training results in many benefits for both managers and employees.

Additionally, organizations have to find new ways to create a committed workforce. Managers need to understand the concept of commitment and which behaviors are displayed by employees committed to the organization (Coetzee, Martins, Basson, & Muller, 2006). Successful organizations today must have managers who motivate and inspire their employees. Successful managers must see themselves not just as bosses, but as performance coaches. A manager must be able to provide employee training, help employees enhance their careers, and mentor them to become the best they can be.

Theoretical Implications

Overall the results supported most of the literature findings of the interrelationships between the engineering concepts; however, conclusive evidence could not be obtained on the effect that these relationships had on organizational outcomes due to the lack of organizational outcome data. Only 10 percent of the responses were returned. This data proved to be inadequate in drawing conclusions on organizational outcomes. This low response was mainly attributed to management's concern for privacy. While the study

did receive support from top management, it appears that mid-level managers were not comfortable providing such confidential data.

Conclusions

The results of this study provided initial support for the presumed relationships among the conceptual model presented in the study and therefore do validate a number of ideas for organizations interested in knowing how to improve organizational outcomes; however, these findings need to be further validated with additional studies on a more diverse population. Organizations and managers may infer from this study that a linkage exists among several of the engineering management concepts presented. The results suggest that a relationship exists between leadership, positive individual commitment, and the right culture. What remains to be proven is if this may indeed lead to heightened organizational outcomes. Thus, while these concepts have long been studied and supported in popular management literature, a key contribution of this study is the notion that they are interrelated and that they may work synergistically in their effect upon organizational outcomes in high-technology organizations. After careful consideration, this researcher hopes that this study may shed light on some new linkage between leadership, commitment, and culture; and recommends that future studies increase the number of subjects from various types of organizations.

Author Biography

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ENDNOTES

1. Varimax rotation is often used in surveys to see how groupings of questions (items) measure the same concept. In statistics, a Varimax rotation is a change of coordinates used in principal component analysis and factor analysis that maximizes the sum of the variances of the squared loadings.

2. AMOS (Analysis of Moment Structures) is an add-on module for a computer program called SPSS (originally, Statistical Package for the Social Sciences). AMOS is designed primarily for structural equation modeling, path analysis, and covariance structure modeling. It features an intuitive graphical interface that allows the analyst to specify models by drawing them. It also has a built-in bootstrapping routine and superior handling of missing data. It reads data from a number of sources, including MS Excel spreadsheets and SPSS databases.

3. p of Close Fit (PCLOSE)—The null hypothesis is that the RMSEA is .05, a close-fitting model. The p value examines the alternative hypothesis that the RMSEA is greater than .05. So if the p is greater than .05, then it is concluded that the fit of the model is "close."