An assessment of the Degree of Implementation of the Baldridge in Education Initiative

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Abstract

This study assessed the relationship among a number of factors and the degree of implementation of the state education reform initiative Baldrige in Education. Four logistic regression models were constructed to analyze the degree of implementation of the Baldrige Criteria of core values, student and stakeholder focus, information and analysis, and school performance results. The likelihood of a participant implementing one or more of these criteria was related to (a) membership on a Continuous Improvement Planning Team, (b) number of training sessions attended, (c) perceived barrier of insufficient information or training, and (d) perceived barrier of lack of administrative buy-in.
An Assessment of the Degree of Implementation of the Baldrige in Education Initiative

Over the course of the past 20 years, quality has been equated with global competitiveness. Concerns for quality permeated all aspects of American life. Companies strived for ISO 9000 certification, an international standard of quality, to compete in the global market. Consumers demanded quality in manufactured products, health care, and service. Products and services were scrutinized for quality from the cars we bought to the retail stores we frequented. Concern for quality was extended to education. Federal, state, and local governments have viewed high-quality education as a tool of economic growth. Taxpayers expected that public dollars would be spent to provide our youth a high-quality education preparing them for postsecondary education and entry into the workforce of a global economy.

The quality of education has been related to the welfare of all citizens. Kindergarten through 12th grade education has provided both public and private benefits. All of society have benefited from education through the development of a productive, civil, and democratic cohesiveness. Education has contributed to economic growth by providing a knowledgeable and skilled workforce. Students have benefited from education through improved income, employment prospects, status, knowledge, and other desired results (Levin, 2001).

Education bureaucrats at all levels have been immersed in the development and implementation of policies, programs, and initiatives formulated to address the growing social concern over student achievement and the quality of the public education system in the United States. Attempts at educational reform have ranged from federal and state legislative action such as the Reauthorization of the Elementary and Secondary Education
Act (Public Law 107-110, 2001) and Ohio’s Student Success Act of 2001 to content specific initiatives such as Reading Recovery. As with all policies, education reform policies were created as an expression of basic beliefs, principles, and aspirations to address social concerns. They were grounded in good intentions by those who constructed them and were aimed at improving a social issue. Regardless of good intentions, education reform policies and programs have not demonstrated the systemic transformational change that was needed on a large scale to bring about improvement in student achievement. The inability to realize the intended outcomes of a policy has not been unique to education. As Pressman and Wildavsky (1984) pointed out, the failure to realize intended outcomes of a policy design is not uncommon and it has become a topic of growing interest to policy makers at all levels of bureaucracy.

A policy, program, or initiative was meaningless unless it was implemented in such a way as to operationalize the goals stated in the policy design. Implementation was defined in the literature as a continually changing and evolving process of actions by a variety of actors in such a way as to realize the intended goals of policy design (Pressman & Wildavsky, 1984; Ripley & Franklin, 1986). The implementation process was critical to realizing anticipated outcomes. Therefore, policies were viewed not only on intent and appeal but also on implementability.

The theoretical discussion of implementation in the literature underscored the general consensus that (a) implementation was rarely within the realm of those who formulated the policy design; (b) there was a large number of external factors that influenced implementation; (c) there was no one person or group that controlled implementation; (d) policy was interpreted, negotiated, and redefined throughout the
implementation process; (e) policy implementation required an institution or agency to
draw from a variety of resources, such as personnel, time, and money; and (f) the values,
beliefs, and organizational structure of the agency had an impact on the process (Elmore,
1979; Hasenfeld & Brock, 1991; Mazmanian & Sabatier, 1989; Patton & Sawicki, 1993;
Pressman & Wildavsky, 1984; Ryan, 1996; Spillane, Reiser & Reimer, 2002).

This research was not focused on an analysis of the Baldrige in Education
Initiative, but rather it was an analysis of the implementation phase of a specific policy
design and process. The Baldrige in Education Initiative provided a context in which to
conduct the research. The Baldrige in Education Initiative was chosen for this research
because it was (a) timely, (b) a nationally recognized initiative, (c) attempted on a
statewide basis, and (d) a priority on the Superintendent of Public Instruction’s agenda
for education reform in Ohio.

The Baldrige Criteria for business as well as for education were grounded in the
total quality management (TQM) movement based on systems theory thinking (Baldrige
National Quality Program, 1999). Systems theory represented a dramatic shift in how an
organization was viewed. It was a shift from the predictable Newtonian (Wheatley, 1999)
and factory model of Taylor’s scientific management theory (Owens, 1998) of viewing
the world in fragmented, predictable, and controllable pieces to viewing the world as a
whole. Senge (1990) points out that “we are taught to break apart problems, to fragment
the world. This apparently makes complex tasks and subjects more manageable” (p. 3).
This general reductionist thinking extended to education as pointed out by Owens (1998):

There is a strong tendency for contemporary educational reforms to have in
mind a set of assumptions about the nature of schools on which the logic of their
efforts pivots. Those assumptions are the same as those underlying the old-fashioned factory, in which management decided what was to be done, directed the workers to do it, then supervised them closely to be sure that the directives were followed in full. (p. 34)

Systems theory was central to the total quality management (TQM) movement of the 1980s. "Total quality management became the buzzword in both business and education" (Schlechty, 1997, p. 52). The concepts of TQM were associated with the names of Crosby, Deming, Feigenbaum, Ishikawa, and Juran (Baldrige National Quality Program, 1999, Lewis & Smith, 1994; Owens, 1998; Schlechty, 1997). TQM emphasized continuous improvement, client satisfaction, and doing it right the first time (Carlson, 1996). It extended the concepts of systems thinking to include teamwork, statistical process control, and a documented measurement and management system (Edwards, 1991).

The Baldrige Quality Award for business was extended to education (Baldrige National Quality Program, 1999). Four of the criteria, which were the focus of this study, were (a) core values, (b) student and stakeholder focus, (c) information and analysis, and (d) school performance results.

Various authors suggested that the implementation of the Baldrige Criteria were possibly related to a number of factors. Woven throughout the total quality management literature were two consistent themes: training and teams. Training was identified as a key resource to implementing TQM (Kouzes & Posner, 1995; Walton, 1986). Teams were viewed as a critical element to getting all participants working on the same organizational goals throughout the change process and ongoing (Coates, 1992; Kaufman
& Zahn, 1993). Thus, two factors included in this study were (a) whether a person was or was not a member of a Continuous Improvement Planning Team and (b) the number of Baldrige training programs a person had completed.

In addition to these two factors, certain barriers may reduce the likelihood that any change will be made in an institution (Coates, 1992; Evans, 1996; Jones & George, 1998; Pressman & Wildavsky, 1984; Ripley & Franklin, 1986). Four possible barriers to the implementation of the Baldrige criteria were identified and included in the analyses conducted in this study (a) the perception of the lack of stakeholder buy-in, (b) the perception of insufficient information or training, (c) the perception of insufficient time, and (d) the perception of the lack of administrative buy-in.

Professional Development Center Used in the Study

The East Regional Professional Development Center (ERPDC) was one of the 12 Ohio Regional Professional Development Centers that participated in providing training programs for the dissemination of the BiE IN principles and methods. Under the direction of the state coach, Jim Shipley, the center offered a series of four different training programs totaling seven sessions from November 2000 to August 2001. The four training programs offered included (East Regional Professional Development Center, 2000, 2001a, 2001b, 2001c): (a) Phase 1 Institute – An Orientation to the Baldrige Approach for School Improvement and Performance excellence, (b) Phase 2 Institute – Using the Baldrige Approach for School Improvement and Performance Excellence Next Steps, (c) Teacher–Student Partnerships – Implementing Baldrige Criteria in the Classroom, and (d) Trainer of Trainers Institute.
The purpose of the Phase 1 Institute training program was to provide an orientation to the Baldrige in Education Initiative as a foundation for continuous school improvement. The expected outcomes of the training were at the level of understanding the core values, student and stakeholder focus, and information and analysis required for district success (East Regional Professional Development Center, 2000).

The Phase 2 Institute training program provided an in-depth study of the Baldrige Criteria and their application to continuous school improvement. The expected outcomes were related to use of the core values, student and stakeholder focus, information and analysis, and the use of data to inform decision-making for school performance results improvement (East Regional Professional Development Center, Phase 2 Institute, 2001).

Teacher-Student Partnerships training was focused on implementing Baldrige Criteria in the classroom. It provided strategies and resources to support the use of Baldrige Criteria. It provided additional training on the core values, student and stakeholder focus, and information and analysis (East Regional Professional Development Center, Teacher-Student Partnership, 2001).

The purpose of the Trainer of Trainers Institute was to equip participants to co-lead awareness and orientation training for using Baldrige Criteria at the school district level. Expected outcomes centered on the ability of the participant to translate the Criteria into action plans and assess districts, schools, and classroom systems against the Baldrige Criteria (East Regional Professional Development Center, Trainer of Trainers, 2001).

Research Participants

Attendance rosters from the Baldrige training sessions held by the ERPDC were obtained. The attendance rosters showed a total attendance of 328 participants over the
course of all training sessions. There was representation from each of the counties served by the Center and included teachers, counselors, principals, associate superintendents, superintendents, curriculum specialists, Educational Service Center staff and others.

Duplicate names and names with incomplete mailing information were eliminated from the attendance roster. This resulted in 247 participants for the purpose of data collection.

Survey Instrument

There is little empirical research available on the implementation process. No empirical research could be found in the literature review on the implementation process of the Baldrige in Education Initiative in secondary education. Therefore, no survey instrument existed that could be used to assess implementation at the school level. Shipley and Associates had developed a series of self-assessment tools for the purpose of providing schools with a mechanism for self-reflection from which to establish an action plan. These self-assessment instruments were completed by participants prior to Baldrige training and did not address implementation or barriers to implementation. For this reason the instruments were not appropriate for use in this study. Thus, a survey was developed for the purpose of data collection specific to this study.

A survey was constructed utilizing policy design and implementation theory, the policy statement and the expected outcomes as stated for each of the four different Baldrige training sessions offered by the ERPDC. The expected outcomes from each of the different sessions identified increasingly higher levels of training in the Baldrige Criteria ranging from awareness and understanding to utilization of the Criteria.
Four closed response questions were developed utilizing the expected outcomes. The four questions addressed the Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results. Participants were asked to identify which of the responses they felt best described the extent to which they were able to utilize Baldrige Criteria at that time.

Each of the response prompts was aligned to a level of Baldrige Criteria implementation. Three levels of implementation were defined. Level 1 was defined as an awareness of the specific Criteria. Level 2 was defined as having an understanding of the specific Criteria and Level 3 was defined as utilizing the Criteria. Level 3 was equated with full implementation of the specific Baldrige Criteria.

Two additional closed response questions were constructed. The first question asked participants to indicate whether or not they were members of a Continuous Improvement Planning team. The second question asked participants to give the number of training sessions they had attended.

Two open response questions were constructed allowing participants to give open narrative response and captured information that could not be elicited through the closed response questions. Questions were positioned in the survey in a non-threatening way, one in the beginning of the survey and one at the end, to build participant trust and reduce intimidation (Rea and Parker, 1997). The first question asked participants to identify what they felt was most beneficial to them in the Baldrige Criteria training sessions. The second question asked participants to cite the most significant barriers to implementing the Baldrige Criteria in their school.
The survey was subjected to multiple revisions and field testing. The surveys were numbered to correspond to an alphabetized attendance roster. This was done to identify non-respondents for a follow-up mailing of the survey. The survey was distributed approximately 13 months following the training to allow participants time to assimilate the knowledge obtained (Guskey, 2000). A total of 107 responses were received. Seven responses were eliminated from the study due to incomplete information. This resulted in a response rate of 40%.

Variables

The dependent and independent variables consisted of data obtained from the survey used in this study. Four dependent variables were constructed; while a total of six independent variables were formed.

Dependent Variables

The Baldrige training sessions delivered by the ERPDC focused on four of the Baldrige Criteria: (a) Core Values, (b) Student and Stakeholder Focus, (c) Information and Analysis, and (d) School Performance Results. Each of the four different training sessions conducted had stated expected outcomes that represented increasingly more in-depth training centered on the four Criteria stated above. Three distinct levels of implementation were identified from the expected outcomes. Level 1 was defined as the participant having an awareness of the specific Criteria. Level 2 represented the participant having an understanding of the specific Criteria and Level 3 was the participant utilizing the specific Criteria.

The dependent variables were the level of implementation of each of the four Criteria ($Y_1$, $Y_2$, $Y_3$, and $Y_4$). Responses to the level of implementation for each of the
Criteria were divided into two categories. Levels 1 and 2 did not reflect implementation and were assigned a value of zero. Level 3 was considered full implementation of the Criteria and was assigned a value of 1.

**Independent Variables**

The independent variables were selected from the policy as defined in the Ohio Administrative Code, the Ohio Department of Education’s strategic plan to implement the program, and the literature review on policy implementation. Independent variables used were: (a) membership on a Continuous Improvement Planning team, (b) number of training sessions attended, and (c) the participants’ perceived barriers to implementation.

The participant’s membership on a Continuous Improvement Planning team \(X_1\) formed one independent variable. Since the responses were binary, a response of no was assigned a value of zero while a yes response was assigned a value of 1. Number of training sessions attended \(X_2\) constituted the second independent variable. This independent variable ranged from a minimum of one training session to a maximum of four sessions.

To identify the most commonly cited perceived barriers, the open-ended responses were grouped into nine categories. The nine categories were: (a) insufficient time, (b) lack of stakeholder buy-in, (c) lack of administrative buy-in, (d) insufficient information/training, (e) dealing with the change process, (f) insufficient personnel, (g) insufficient funds, (h) no barriers, and (i) other. The percentage of participants who mentioned each of these nine categories was calculated (see Table 1).
Based on the frequency of the participants' responses four perceived barriers were identified as common barriers to implementation. The four most commonly cited perceived barriers were: (a) lack of stakeholder buy-in ($X_1$), (b) insufficient time ($X_2$), (c) insufficient information/training ($X_3$), and (d) lack of administrative buy-in ($X_6$).

The responses for each of these barriers to implementation consisted of two categories. If the given barrier was not perceived to be present, a value of zero was assigned to the response; while a value of one was assigned to a response indicating that the barrier was perceived to exist (see Table 1).

Research Questions

Research Question 1 established the dependent variable defined as implementation of the Baldrige Criteria and the independent variable defined as the number of training sessions attended by a participant. It explored whether or not those who had received training perceived they were able to implement the Baldrige Criteria and whether or not the number of training sessions attended increased the likelihood of the participant's perceived implementation of the Criteria.

Research Question 1 was stated as:

Is an increase in the number of training sessions attended by a participant associated with an increase in the likelihoods that the Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results Criteria were implemented?
A total of four null hypotheses were constructed for Research Question 1, that is, one for each of the four dependent variables: (a) Baldrige Criteria of Core Values, (b) Student and Stakeholder Focus, (c) Information and Analysis, and (d) School Performance Results Criteria.

Research Question 2 established the independent variable of participation on a Continuous Implementation Planning team and asks if membership increased the likelihood of implementing Baldrige Criteria.

Research Question 2 was stated as:

Is participation on a Continuous Improvement Planning team associated with an increase in the likelihoods that the Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results Criteria were implemented?

Four null hypotheses were constructed for Research Question 2.

Research Question 3 established the independent variables of perceived barriers to implementation by the participant and explored the likelihood of the participant implementing the Baldrige Criteria in light of the perceived barriers.

Research Question 3 was stated as:

Are perceived barriers as identified by participants associated with decreases in the likelihoods that the Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results were implemented?
Since four perceived barriers were identified and four dependent variables were included in Research Question 3, a total of 16 null hypotheses were constructed for this research question.

Analytic Technique

Four logistical regression models were used to test the 24 null hypotheses included in this study because each dependent variable was dichotomous. As noted by Peng, Lee, and Ingersoll (2002), logistic regression is ideal for handling educational research problems that call for the analysis and prediction of a dichotomous dependent variable. The logistic regression model was tested using the SPSS® computer software.

As previously discussed, a value of zero indicated that the participant perceived that there was no implementation of a given Criteria (e.g., core values, \(Y_1\); student and stakeholder focus, \(Y_2\); information and analysis \(Y_3\); and school performance results, \(Y_4\)). A value of 1 represented that the participant perceived that there was full implementation of the specific Criterion. The independent variables in the model were membership on a Continuous Improvement Planning team (\(X_1\)), number of training sessions attended by the participant (\(X_2\)), lack of stakeholder buy-in (\(X_3\)), insufficient time (\(X_4\)), insufficient information/training (\(X_5\)), and lack of administrative buy-in (\(X_6\)).

Logistic regression predicts the log odds that an observation belongs to the group assigned a value of 1. Therefore, each one-unit of change in the predictor is associated with a change in the log odds. The Wald test was utilized to test each of the six dichotomous independent variables.

If it was determined that the results were statistically significant a Delta-\(p\) value was calculated to assess the practical significance of the variable. The Delta-\(p\) statistic
measures change in the dependent variable expressed as a probability with the initial probability set at the mean of the dependent variable (Fraas & Drushal, 2004; Petersen, 1985). The Delta-$p$ statistic is calculated as follows:

\[
\text{Delta-}p = \frac{\exp(L_i)}{[1 + \exp (L_i)]} - P_0
\]

Where:

1. $P_0$ is the sample mean of the dependent variable.
2. $L_i$ is the logit after the unit change in the variable under consideration.

**Logistic Regression Model Results**

Before the four logistic regression models could be used to test the 24 null hypotheses posed in this study, they were analyzed for the existence of outliers and multicollinearity. If outliers or multicollinearity were deemed to be significant problems, the data would be reviewed for possible modifications before the hypotheses were tested.

**Testing for Outliers and Multicollinearity**

Cook's $d$ values were used to test for outliers, which may have substantially influenced the goodness of fit of each model (Neter, Wasserman, & Kutner, 1985). If a participant's data were determined to significantly degrade the degree of model fit, they would be examined for possible causes of such values before the model was used to test specific null hypotheses. The Cook's $d$ values were calculated and compared to a critical F value located at the 50th percentile of the F distribution with 7 and 95 degrees of freedom for the numerator and denominator, respectively. The critical F value used for each of the four models was .91. Any Cook's $d$ value that exceeded the Critical F value of .91 would be considered to be an outlier.
The variance inflation factor (VIF) values were calculated to assess the degree of relationship among the independent variables. The VIF value for the six independent variables team membership $X_1$, number of training programs attended $X_2$, lack of stakeholder buy-in $X_3$, insufficient information or training $X_4$, insufficient time $X_5$, and lack of administrative buy-in $X_6$ were 1.10, 1.10, 1.29, 1.27, 1.39, and 1.19, respectively. Only VIF values in excess of 10 were judged to indicate a substantial degree of multicollinearity. Since none of the six VIF values approached the value of 10, multicollinearity was determined not to be a problem in the testing of the 24 null hypotheses with this study's data set and its logistic regression models.

*Testing the Null Hypotheses Related to Model 1*

The dependent variable for the first logistic regression model (Model 1) was the Baldrige Criteria Core Values ($Y_1$). The maximum Cook's $d$ value generated by the analysis of the data with this model was .042. Since none of the Cook's $d$ values exceeded the Critical F value of .91 it was determined that no outliers existed when the data were analyzed with Model 1. Since the results of the tests used to determine if outliers or multicollinearity posed significant problems for the results generated for the first logistic regression model demonstrated no substantial problem, it was used to test the null hypotheses.

Wald test values for the six logistic regression coefficients in Model 1, which were generated for the six independent variables, were used to test the null hypotheses dealing with Baldrige Criteria of Core Values. If the coefficient for a given independent variable possessed the hypothesized sign and the directional probability value (i.e., one-tailed probability) of its Wald test was less than the .05 level of significance, the
corresponding null hypothesis was rejected. Delta $p$ values were calculated for those independent variables in the model that had significant coefficients. The results produced for the first logistic regression model are contained in Table 2.

Insert Table 2 about here

The results generated for Model 1 revealed that the coefficient for the Continuous Improvement Planning Team variable ($X_1$) was negative ($b = -.056$), which was not consistent with the hypothesized sign. Therefore, membership on a continuous improvement planning team was not associated with an increase in the likelihood of implementing the Baldrige Criterion core values.

The coefficient generated for the number of training programs attended variable was positive ($b = .742$) as hypothesized. Its Wald test value of 11.69 produced a one-tailed probability ($p < .001$) that was less than the pre-established .05 alpha level. Therefore, the likelihood of implementing the Baldrige Criterion core values was positively associated with the number of training programs attended. The Delta-$p$ value for this coefficient was .18. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion core values was .47, the completion of an additional training program was associated with an increase in this probability level to .65.

The coefficient generated for the lack of stakeholder buy-in variable was negative ($b = -.017$) as hypothesized. Its Wald test value of .001 produced a one-tailed probability value of .487. Therefore, the perception of lack of stakeholder buy-in was not associated with a decrease in the likelihood of implementing the Baldrige Criterion core values.
The coefficient generated for the insufficient information or training variable was negative \( b = -1.036 \) as hypothesized. Its Wald test value of 11.694 produced a one-tailed probability value of .032. Therefore, insufficient information or training was associated with a decrease in the likelihood of implementing the Baldrige Criterion core values. Its Delta-\( p \) value was -.23. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion core values was .47, this perceived barrier was associated with a decline in this probability level to .24.

The coefficient generated for the variable insufficient time was negative \( b = -.221 \) as hypothesized. However, its Wald test value of .146 produced a one-tailed probability value of .351. Therefore, the perception of insufficient time was not associated with a decrease in the likelihood of implementing the Baldrige Criterion core values.

The coefficient generated for the variable lack of administrative buy-in was negative \( b = -1.221 \) as hypothesized. Its Wald test value of 3.639 produced a one-tailed probability value of .028. Therefore, the perception of lack of administrative buy-in was associated with a decrease in the likelihood of implementing the Baldrige Criterion core values. Its Delta-\( p \) value was -.23. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion core values was .47, this perceived barrier was associated with a decline in this probability level to .24.

*Testing the Null Hypotheses Related to Model 2*

The dependent variable for Model 2 was the Baldrige Criterion Student and Stakeholder Focus \( (Y_2) \). The maximum Cook’s \( d \) value generated by the analysis of the data for this model was .040. Since none of the Cook’s \( d \) values exceeded the Critical F value of .91 it was determined that no outliers existed in the data set for this model.
Based on the results of the tests used to determine outliers and multicollinearity, it was determined that neither was a substantial concern. Therefore, Model 2 was used to test the null hypotheses of this study's 102 participants.

Wald test values for the six logistic regression coefficients in Model 2, which were generated for the six independent variables, were used to test the null hypotheses dealing with Baldrige Criterion Student and Stakeholder Focus. The results produced by Model 2 are contained in Table 3.

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Insert Table 3 about here
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The results generated for Model 2 revealed that the coefficient for the Continuous Improvement Planning Team variable was positive ($b = .751$), which was the hypothesized sign. However, the Wald test value of 2.627 produced a one-tailed probability of .053. For this reason, membership in a continuous improvement planning team was not associated with an increase in the likelihood of implementing the Baldrige Criterion student and stakeholder focus.

The coefficient generated for the variable number of training programs attended was positive ($b = .529$) as was hypothesized. Its Wald test value of 6.794 produced a one-tailed probability of .005. Consequently, the number of training programs attended was associated with an increase in the likelihood of implementing the Baldrige Criterion student and stakeholder focus. The Delta-$p$ value for this coefficient was .13. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion
student and stakeholder focus was .46, the completion of an additional training program was associated with an increase in this probability level to .59.

The coefficient generated for the variable lack of stakeholder buy-in was negative ($b = -.595$) as hypothesized. Its Wald test value of 1.381 produced a one-tailed probability value of .120. Therefore, the perception of lack of stakeholder buy-in was not associated with a decrease in the likelihood of implementing the Baldrige Criterion.

student and stakeholder focus.

The coefficient generated for the variable insufficient information or training was negative ($b = -.635$) as hypothesized. However, the Wald test value of 1.372 produced a one-tailed probability value of .121. Therefore, insufficient information or training was not associated with a decrease in the likelihood of implementing the Baldrige Criterion.

student and stakeholder focus.

The coefficient generated for the variable insufficient time was negative ($b = -.523$) as hypothesized. However, its Wald test value of .802 produced a one-tailed probability value of .185. Therefore, the perception of insufficient time was not associated with a decrease in the likelihood of implementing the Baldrige Criteria student and stakeholder focus.

The coefficient generated for the variable lack of administrative buy-in was negative ($b = -1.090$) as was hypothesized. Its Wald test value of 2.922 produced a one-tailed probability value of .044. Therefore, the perception of lack of administrative buy-in was associated with a decrease in the likelihood of implementing the Baldrige Criterion.

student and stakeholder focus. Its Delta-$p$ value was -.24. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion student and
stakeholder focus was .46, this perceived barrier was associated with a decline in this probability level to .22.

Testing the Null Hypotheses Related to Model 3

The dependent variable for Model 3 was the Baldrige Criterion Information and Analysis, ($Y_3$). The maximum Cook’s $d$ value generated by the analysis of the data for this model was .040. Since none of the Cook’s $d$ values exceeded the Critical F value of .91 it was determined that no outliers existed in the data set for this model. Based on the results of the tests used to determine outliers and multicollinearity, it was determined that neither was a substantial concern. Therefore, Model 3 was used to test the null hypotheses of this study’s 102 participants.

Wald test values for the six logistic regression coefficients, which were generated for the six independent variables, were used to test the null hypotheses dealing with Baldrige Criterion Information and Analysis. The results produced by Model 3 are contained in Table 4.

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Insert Table 4 about here

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The coefficient generated for the variable membership on a continuous improvement team was positive ($b=.452$) as hypothesized. However, its Wald test value of .722 produced a one-tailed probability of .198. Thus, membership on a continuous improvement team was not associated with an increase in the likelihood of implementing the Baldrige Criterion information and analysis.
The coefficient generated for the variable number of training programs attended was positive \((b=.832)\) as expected. Its Wald test value of 13.480 produced a one-tailed probability less than .001. Consequently, the number of training programs attended was associated with an increase in the likelihood of implementing the Baldrige Criterion information and analysis. The Delta-\(p\) value for this coefficient was .18. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion student and stakeholder focus was .32, the completion of an additional training session was associated with an increase in this probability level to .50.

The coefficient generated for the variable lack of stakeholder buy-in was negative \((b=-.411)\) as hypothesized. However, its Wald test value of .540 produced a one-tailed probability value of .232 \((p > .05)\). Therefore, the perception of lack of stakeholder buy-in was not associated with a decrease in the likelihood of implementing the Baldrige Criterion information and analysis.

The coefficient generated for the variable insufficient information or training was negative \((b=-.443)\) as hypothesized. However, its Wald test value of .591 produced a one-tailed probability value of .221. Therefore, the perception of insufficient information or training was not associated with the likelihood of implementing the Baldrige Criterion information and analysis.

The coefficient generated for the variable insufficient time was negative \((b=.851)\) as expected. However, its Wald test value of 1.650 produced a one-tailed probability value of .100. Therefore, the perception of insufficient time was not associated with a decrease in the likelihood of implementing the Baldrige Criterion information and analysis.
The coefficient generated for the variable lack of administrative buy-in was negative \((b = -1.138)\) as hypothesized. Its, Wald test value of 2.513 produced a one-tailed probability value of .056. Thus, the perception of lack of administrative buy-in was not associated with a decrease in the likelihood of implementing the Baldrige Criterion information and analysis.

**Testing the Null Hypotheses Related to Model 4**

The dependent variable for Model 4 was the Baldrige Criterion School Performance Results \((Y_4)\). The maximum Cook’s \(d\) value generated by the analysis of the data for this model was .042. Since none of the Cook’s \(d\) values exceeded the Critical \(F\) value of .91 it was determined that no outliers existed in the data set for this model. Since the results of the tests used to determine whether outliers and multicollinearity were potential problems indicated that neither was of substantial concern, Model 4 was used to test six null hypotheses.

Wald test values for the six logistic regression coefficients, which were generated for the six independent variables, were used to test the null hypotheses dealing with Baldrige Criterion Performance Results. The results produced by Model 4 are contained in Table 5.

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Insert Table 5 about here

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The coefficient generated for the variable membership on a Continuous Improvement Team was positive \((b = 0.614)\) as hypothesized. However, its Wald test value of 1.642 produced a one-tailed probability of .100. Thus, membership on a continuous
improvement team was not associated with an increase in the likelihood of implementing the Baldrige Criterion school performance results.

The coefficient generated for the variable number of training programs attended was positive ($b = 0.685$) as expected. Its Wald test value of 10.301 produced a one-tailed probability of 0.001. Consequently, the number of training programs attended was associated with an increase in the likelihood of implementing the Baldrige Criterion school performance results. The Delta-$p$ value for this coefficient was 0.17. If it is assumed that a participant's initial probability of implementing the Baldrige Criterion school performance results was 0.42, the completion of an additional training program was associated with an increase in this probability level to 0.59.

The coefficient generated for the variable lack of stakeholder buy-in was negative ($b = -0.175$) as assumed. Its Wald test value of 0.115 produced a one-tailed probability value of 0.367 ($p > 0.05$). Therefore, the perception of lack of stakeholder buy-in was not associated with a decrease in the likelihood of implementing the Baldrige Criterion school performance results.

The coefficient generated for the variable insufficient information or training was negative ($b = -0.593$) as expected. However, its Wald test value of 1.109 produced a one-tailed probability value of 0.146. Therefore, the perception of insufficient information or training was not associated with a decrease in the likelihood of implementing the Baldrige Criterion school performance results.

The coefficient generated for the variable lack of time was positive ($b = 0.432$), which was not consistent with the hypothesized sign. Therefore, the perception of
insufficient time was not associated with a decrease in the likelihood of implementing the Baldrige Criterion school performance results.

The coefficient generated for the variable lack of administrative buy-in was negative \( (b=-1.221) \) as expected. However, its Wald test value of 2.489 produced a one-tailed probability value of .057. Therefore, the perception of lack of administrative buy-in was not associated with a decrease in the likelihood of implementing the Baldrige Criterion school performance results.

Results

Wald test values of the six logistic regression coefficients generated by the analysis of each of the four logistic regression models were used to test the 24 null hypotheses. If the coefficient of a given independent variable possessed the hypothesized sign and the directional probability was less then the .05 level of significance, the null hypothesis was rejected. The findings are as follows:

1. Membership on a Continuous Improvement Team \( (X_1) \) was not associated with a statistically significant increase in the likelihood of a participant implementing the four Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis and School Performance Results.

2. The number of training programs attended \( (X_2) \) was associated with a statistically significant increase in the likelihood of a participant implementing the four Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results.
3. The perceived barrier of lack of stakeholder buy-in ($X_3$) was not associated with a statistically significant decrease in the likelihood of a participant implementing the four Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results.

4. The perceived barrier of insufficient information or training ($X_4$) was associated with a statistically significant decrease in the likelihood of a participant implementing the Baldrige Criterion of Core Values.

5. The perceived barrier of insufficient time ($X_5$) was not associated with a statistically significant decrease in the likelihood of a participant implementing the four Baldrige Criteria of Core Values, Student and Stakeholder Focus, Information and Analysis, and School Performance Results.

6. The perceived barrier of lack of administrative buy-in ($X_6$) was associated with a statistically significant decrease in the likelihood of a participant implementing the Baldrige Criteria Core Values and Student and Stakeholder Focus.

Implications of the Study

The implications of this study are discussed in terms of the three significant findings: (a) the Number of Training Programs Attended, (b) Insufficient Information or Training, and (c) Lack of Administrative Buy-In. Recommendations for future attempts to implement school reform initiatives are given.
Training Programs

The findings of this study support the position that training is a key to successfully implementation of change. Policy makers cannot legislate change. They can, however, allocate resources necessary to support the change process. The findings of this study would suggest that policy makers consider ensuring adequate resources such as funds to support training throughout the change process.

Those charged with implementation at the local level or point of service might pay particular attention to providing initial and ongoing training to support the policy implementation process. This can be accomplished by setting priorities and aligning the budget with those priorities supporting the initial and ongoing training necessary to implement and sustain the change. In addition, local administrators should give attention to why the change is necessary through communication with faculty and staff using such techniques as one-on-one discussion, small groups, and open forums. School administrators may want to ensure teacher and staff participation in training by assigning individuals to attend programs and share information with others. Local administrators and those offering the training program might collaborate to select appropriate dates, times and locations for training programs to maximize attendance.

Innovation in the delivery of training programs may also increase access to the information and skills necessary to implement the change. Such innovative delivery models might include telecasts, distance learning, and web-based instruction. Those responsible for training might also consider web-based resources to provide ongoing instructional support to the change process such as tutorials, additional web site resources and an on-line “tool-box”.
Ongoing evaluation of the training programs would provide a feedback loop for determining the effectiveness of the programs. If utilized, this information could be used to continuously update and ensure quality programs.

*Insufficient Information or Training*

The results of this study support the perception of lack of information or training as a barrier to implementation of the Baldrige Criterion of core values. This finding was consistent with the finding that the number of training programs attended was important in the implementation process. As discussed in Chapter 2, those who are charged with the implementation of a policy or initiative at the local level need to have an understanding of the proposed change.

The need for additional training should be assessed regularly throughout the implementation process. This can be done through surveying teachers and staff as to their needs for additional training and through small group discussion.

*Lack of Administrative Buy-In*

The findings of this study support the perception of lack of administrative buy-in as a barrier to the implementation of the Baldrige Criteria of core values and student and stakeholder focus. This is related to the leadership role of local administrators in the change process. Administrators demonstrate their support for initiatives to the community, stakeholders, and teachers and staff in a variety of ways. This includes the type of communication they choose to use when addressing the initiative. Memos and emails are routine forms of communication and do not emphasize the importance of the initiative, however person-to-person communication allows leaders to stress the significance of the change process being undertaken.
Administrators can demonstrate their support for a priority initiative by aligning the budget with the resources needed to implement the change as discussed earlier. In addition, administrators can build capacity within the school to support the change process by empowering teachers and staff to act on the information they have received in the training programs.
References


Table 1

Number and Percentage of Respondents Frequency Who Cited Barriers to Implementation of the Baldrige Criteria

<table>
<thead>
<tr>
<th>Specific Barriers</th>
<th>Number of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder buy-in</td>
<td>26</td>
<td>26.0</td>
</tr>
<tr>
<td>Insufficient time</td>
<td>24</td>
<td>24.0</td>
</tr>
<tr>
<td>Insufficient information/training</td>
<td>20</td>
<td>20.0</td>
</tr>
<tr>
<td>Lack of administrative buy-in</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>Dealing with change process</td>
<td>6</td>
<td>6.0</td>
</tr>
<tr>
<td>Insufficient funds</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Insufficient personnel</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>No barriers</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 2

Logistic Regression Analysis for the Baldrige Criteria Core Values

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Wald</th>
<th>df</th>
<th>p-value</th>
<th>Delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Membership</td>
<td>-.056</td>
<td>.014</td>
<td>1</td>
<td>.452</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(.465)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Programs Attended</td>
<td>.742</td>
<td>11.694</td>
<td>1</td>
<td>&lt;.001</td>
<td>.18</td>
</tr>
<tr>
<td></td>
<td>(.217)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Stakeholder Buy-in</td>
<td>-.017</td>
<td>.001</td>
<td>1</td>
<td>.487</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(.507)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient Information or</td>
<td>-.1036</td>
<td>3.435</td>
<td>1</td>
<td>.031</td>
<td>-.23</td>
</tr>
<tr>
<td>Training</td>
<td>(.559)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient Time</td>
<td>-.221</td>
<td>.146</td>
<td>1</td>
<td>.351</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(.577)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Administrative</td>
<td>-.1221</td>
<td>3.639</td>
<td>1</td>
<td>.028</td>
<td>-.25</td>
</tr>
<tr>
<td>Buy-in</td>
<td>(.504)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.155</td>
<td>3.452</td>
<td>1</td>
<td>.063</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.622)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Probability of the participant’s implementation of core values was .47.

b Each number in parenthesis reflects the Standard Error of the coefficient.

c Each p value is one-tailed probability, except for the constant which is two-tailed.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Wald</th>
<th>df</th>
<th>p-value&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Membership</td>
<td>.751 (.464)</td>
<td>2.627</td>
<td>1</td>
<td>.053</td>
<td>-</td>
</tr>
<tr>
<td>Training Programs Attended</td>
<td>.529 (.203)</td>
<td>6.794</td>
<td>1</td>
<td>.005</td>
<td>.13</td>
</tr>
<tr>
<td>Lack of Stakeholder Buy-in</td>
<td>-.595 (.507)</td>
<td>1.381</td>
<td>1</td>
<td>.120</td>
<td>-</td>
</tr>
<tr>
<td>Insufficient Information or Training</td>
<td>-.635 (.542)</td>
<td>1.372</td>
<td>1</td>
<td>.121</td>
<td>-</td>
</tr>
<tr>
<td>Insufficient Time</td>
<td>-.523 (.584)</td>
<td>.802</td>
<td>1</td>
<td>.185</td>
<td>-</td>
</tr>
<tr>
<td>Lack of Administrative Buy-in</td>
<td>-1.090 (.637)</td>
<td>2.922</td>
<td>1</td>
<td>.044</td>
<td>-.24</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.085 (.621)</td>
<td>3.052</td>
<td>1</td>
<td>.081</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Probability of the participant’s implementation of student and stakeholder focus was .46

<sup>b</sup> Each number in parenthesis reflects the Standard Error of the coefficient

<sup>c</sup> Each p-value is one-tailed probability, except for the constant which is two-tailed.
Table 4

Logistic Regression Analysis for the Baldrige Criteria Information and Analysis\textsuperscript{a}

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient\textsuperscript{b}</th>
<th>Wald</th>
<th>df</th>
<th>p-value\textsuperscript{c}</th>
<th>Delta $p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Membership</td>
<td>.452 (.532)</td>
<td>.722</td>
<td>1</td>
<td>.198</td>
<td>-</td>
</tr>
<tr>
<td>Training Programs Attended</td>
<td>.832 (.227)</td>
<td>13.480</td>
<td>1</td>
<td>&lt;.001</td>
<td>.20</td>
</tr>
<tr>
<td>Lack of Stakeholder Buy-in</td>
<td>-.411 (.560)</td>
<td>.540</td>
<td>1</td>
<td>.232</td>
<td>-</td>
</tr>
<tr>
<td>Insufficient Information or</td>
<td>- .443 (.227)</td>
<td>.591</td>
<td>1</td>
<td>.221</td>
<td>-</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient Time</td>
<td>-.851 (.663)</td>
<td>1.650</td>
<td>1</td>
<td>.100</td>
<td>-</td>
</tr>
<tr>
<td>Lack of Administrative Buy-in</td>
<td>-1.138 (.718)</td>
<td>2.513</td>
<td>1</td>
<td>.056</td>
<td>-</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.339 (.710)</td>
<td>10.848</td>
<td>1</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{a} Probability of the participant's implementation of information and analysis was .32.

\textsuperscript{b} Each number in parenthesis reflects the Standard Error of the coefficient.

\textsuperscript{c} Each $p$-value is one-tailed probability, except the constant which was two-tailed.
Table 5

*Logistic Regression Analysis for the Baldrige Criteria School Performance Results* \(^a\)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient (^b)</th>
<th>Wald</th>
<th>df</th>
<th>p-value (^c)</th>
<th>Delta (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Membership</td>
<td>.614 (.480)</td>
<td>1.642</td>
<td>1</td>
<td>.100</td>
<td>-</td>
</tr>
<tr>
<td>Training Programs Attended</td>
<td>.685 (.213)</td>
<td>10.301</td>
<td>1</td>
<td>.001</td>
<td>.17</td>
</tr>
<tr>
<td>Lack of Stakeholder Buy-in</td>
<td>-.175 (.516)</td>
<td>.115</td>
<td>1</td>
<td>.367</td>
<td>-</td>
</tr>
<tr>
<td>Insufficient Information or Training</td>
<td>-.593 (.563)</td>
<td>1.109</td>
<td>1</td>
<td>.146</td>
<td>-</td>
</tr>
<tr>
<td>Insufficient Time</td>
<td>.432 (.591)</td>
<td>.534</td>
<td>1</td>
<td>.233</td>
<td>-</td>
</tr>
<tr>
<td>Lack of Administrative Buy-in</td>
<td>-1.042 (.660)</td>
<td>2.489</td>
<td>1</td>
<td>.057</td>
<td>-</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.960 (.671)</td>
<td>8.531</td>
<td>1</td>
<td>.004</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Probability of participant’s implementation of school performance results was .42

\(^b\) Each number in parenthesis reflects the Standard Error of the coefficient

\(^c\) Each \(p\)-value is one-tailed probability, except for the constant which was two-tailed.