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Career and Technical Education and the Malcolm Baldrige Quality Award in Education

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CAREER AND TECHNICAL EDUCATION AND THE MALCOLM BALDRIGE QUALITY AWARD IN EDUCATION

by

Patricia Crum-Allen

A dissertation submitted to the Graduate College in partial fulfillment of the requirements for the degree of Doctor of Philosophy Educational Leadership, Research and Technology Western Michigan University August 2014

Doctoral Committee:

Louann Bierlein Palmer, Ed.D., Chair
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This study examined Career and Technical Education (CTE) Centers in the State of Michigan and their potential alignment with the Malcolm Baldrige Quality Award in Education. CTE center leaders and their faculty were asked to provide their perceptions of how well their organizations meet Baldrige quality elements, using a version of the Baldrige Assessment Tool. The study further queried CTE center leaders and their faculty with regard to quality awards received and their desire to pursue an external quality award. Differences between CTE leaders and faculty responses were explored.

This study was quantitative in design using survey research to gather perceptions of CTE center leaders and their faculty. The data collection tool utilized a six-point Likert scale moving from strong disagreement to strong agreement. An open-ended question was provided for further quality suggestion. The influence of demographics on responses was also investigated. Quantitative statistics, including frequency, descriptive, ANOVA, and regression were employed.

CTE center leaders and faculty from the 55 CTE centers in the State of Michigan were invited to participate in an online survey, and 386 (28.5%) responded; nearly three-fourths were faculty members.

Frequency and descriptive statistics revealed the perception by CTE center leaders and faculty that their organizations were strong enough to win an external quality award. Of the 40 Baldrige items found on the assessment tool, only four items had less than 50% of
participants who did not indicate moderate and/or strong agreement with each of the items. Items ranked from a 5.71 to 4.04 mean. Statistically significant differences between leaders and faculty were identified in four categories (Leadership, Strategic Planning, Workforce Focus, & Results), whereby the total responses of leaders were significantly more positive than those of faculty. Various demographic variables were found to be predictors of perceptions (e.g., when the total number of administrators, faculty, staff, and students were held constant, the responses from the centers in the northern part of the state were significantly more negative than for those of centers in the southeastern part of the state).

Recommendations for CTE leaders regarding quality issues are offered.
DEDICATION

This dissertation is dedicated to C. Elmer Crum, my father and my life’s greatest teacher. Everything I ever needed to know I learned from you.
ACKNOWLEDGMENTS

There are many individuals to thank for their assistance in the creation of this dissertation. I would like to thank Dr. Louann Bierlein Palmer, my Advisor and Chair. From the first assigned paper on the Burns book, *Leadership*, to the writing of this dissertation some years later, you have expected nothing but the best from me. You were thorough and timely in getting work back to me, while always sharing the next step in work to be done. Thank you for challenging me and showing me, by example, how to perform work to the highest quality levels.

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Acknowledgments—Continued

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In addition, I would like to thank all of the CTE center leaders, faculty, and paraprofessional faculty members who answered this survey. Without your cooperation, the research would not have been possible. Thank you for taking the time to give my study your thoughtful consideration. Thanks also go out to CTE center administrators who provided e-mail addresses and/or forwarded my survey on to faculty.

To the Grand Valley State University Statistical Consulting Center, thank you for your assistance and upbeat support in analyzing the data from this research.

A very special thank you to my parents, C. Elmer and Viola Crum. It is bittersweet that you will be watching from heaven as I defend this research. I appreciate all you did for me throughout your time on this earth, which enabled me to be in the position to write this dissertation.

I would also like to thank my daughters, Pamela and Paula, and my grandchildren for your understanding, especially when grandma had to miss a playground date. The enthusiasm, encouragement, and support I received from all of you kept me pushing forward. Lastly, I would like to thank the single person without whom any of this would have been possible, my husband Bryan. Your love and support were steadfast. You were
the one who supported me during those times when I wanted to quit, but ultimately let me
be the one to make the decision to keep going. You helped make possible something I
had dreamed of all of my life.

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Patricia Crum-Allen
# TABLE OF CONTENTS

ACKNOWLEDGMENTS ........................................................................................................... ii  
LIST OF TABLES .................................................................................................................... viii  
LIST OF FIGURES .................................................................................................................. x  

CHAPTER

I. INTRODUCTION ........................................................................................................... 1  
   Background ..................................................................................................................... 1  
   Problem Statement and Research Questions ............................................................... 8  
   Summary of Methods ................................................................................................... 14  
   Chapter I Closure ......................................................................................................... 14  

II. LITERATURE REVIEW ............................................................................................... 15  
   History of Total Quality Management ....................................................................... 15  
   Business Excellence Models ....................................................................................... 20  
   The Relationship between Practices and Performance .............................................. 22  
   Recent Events in the Quality Movement in Education .............................................. 24  
   CTE Career Cluster Applicability .............................................................................. 31  
   The School-to-Work Transition ............................................................................... 35  
   Summary of the Literature Review ............................................................................ 38  

III. METHODOLOGY ....................................................................................................... 39  
   Research Design Overview ......................................................................................... 40  

v
Table of Contents—Continued

CHAPTER

Sample, Population, and Participants .............................................. 40

Instrumentation ................................................................................ 41

Pilot Study and IRB Approval ......................................................... 44

Survey Distribution and Data Collection ........................................ 44

Data Analysis .................................................................................. 45

Limitations and Delimitations .......................................................... 46

Researcher ....................................................................................... 48

Chapter III Summary ........................................................................ 48

IV. RESULTS .......................................................................................... 50

Description of the Population .......................................................... 52

Analysis of Questions ....................................................................... 56

Research Question 1 ........................................................................ 56

Research Question 2 ........................................................................ 68

Chapter IV Summary ........................................................................ 77

V. DISCUSSION AND RECOMMENDATIONS .................................... 78

Summary of Major Results ................................................................. 79

Findings Related to Extent of Alignment with the Baldrige Award Criteria Categories ......................................................... 79

Findings Related to Experience with and Desire to Pursue Quality Awards ............................................................................. 83

Findings Related to Difference in Responses between CTE Center Leaders and Faculty ........................................................ 84

vi
# Table of Contents—Continued

## CHAPTER

- Findings Related to the Extent to Which Demographics Influence Responses ......................................................... 85
- Implications for Future Research .......................................................... 89
- Delimitations and Limitations ............................................................. 91
- Implications for Policy, Practice, and Organization ................................. 91
  - Leadership ................................................................................ 95
  - Strategic Planning ...................................................................... 95
  - Customer Focus ......................................................................... 97
  - Measurement, Analysis, and Knowledge Management .................. 98
  - Workforce Focus ....................................................................... 98
  - Closing Thoughts ...................................................................... 98

## REFERENCES ......................................................................................................... 100

## APPENDICES

- A HSIRB Approval Letter ................................................................................. 108
- B Data Collection Instrument ........................................................................... 110
- C Email Communications ................................................................................. 120
- D Quality Awards Received ........................................................................... 124
- E Open-Ended Question Comments ................................................................. 129
- F Map of 55 Area Career and Technical Education Centers/Programs in Michigan .......................................................................................................................... 140
LIST OF TABLES

1. CTE Center Demographic Information ........................................................ 54
2. Career Cluster Areas ..................................................................................... 55
3. Leadership Criteria Items .............................................................................. 57
4. Strategic Planning Criteria Items .................................................................. 58
5. Customer Focus Criteria Items ..................................................................... 59
6. Measurement, Analysis, and Knowledge Management Criteria Items ........ 60
7. Workforce Focus Criteria Items .................................................................... 61
8. Operations Focus Criteria Items .................................................................... 62
9. Results Criteria Items .................................................................................... 63
10. Quality Awards Received by CTE Centers .................................................. 65
11. Participant Comments on Areas of CTE Needing Improvement with Regard to Quality .......................................................................................... 66
12. CTE Personnel Experience with Quality Awards ........................................ 69
13. CTE Personnel Desire to Apply for a Quality Award(s) .............................. 70
14. Significant Differences in Item Responses Between CTE Center Leaders and Faculty .................................................................................................... 71
15. Cronbach’s Alpha Reliability Testing for Baldrige Category Items ............ 72
16. Differences in Desire to Pursue a Quality Award by Position ...................... 74
17. Demographic Influence on Responses .......................................................... 76
18. Mean Ranking of Baldrige Category Items .................................................. 80
List of Tables—Continued

19. Demographic Influences on Baldrige Categories ........................................... 86
20. Recommendations .................................................................................................. 93
LIST OF FIGURES

1. Conceptual Frame for Allen’s 2014 Study ................................................... 12
2. Statistics Employed ....................................................................................... 46
CHAPTER I
INTRODUCTION

The Nation at Risk report of 1983 and the No Child Left Behind Act of 2002 drew public attention to the need for educational reform in the United States. Both concluded that the United States was falling behind in core subject areas (especially math and science), when compared with other industrialized countries of the world. This led to a call for action by result-seeking stakeholders. Original and innovative approaches to education were sought as an alternative to traditional delivery methods which had been in place for decades (Fuchs & Deshler, 2007). Educational institutions have been under increasing pressure from local communities, state and federal governments, and the business community to show educational improvements and progress. Educators have looked to business and industry for non-traditional approaches to education and training, which may be transferable to elementary, secondary, and postsecondary educational settings (Baumol, 2004). In response to such pressures, some schools and school districts have undertaken the pursuit of total quality processes in an effort toward educational reform.

Background

The need for an educated society, and the concern that the United States is falling behind in educating its citizens, has been a concern for decades. Dwight D. Eisenhower and John F. Kennedy formed commissions to identify weaknesses in the United States educational system, both acting in part to the launch of the Sputnik satellite by the Soviet
Union in 1957 (Zhao, 2009). In 1983, Ronald Reagan also formed a commission to investigate why American schools at the elementary, secondary, and postsecondary levels were not only continuing to fall behind, but appeared mediocre in their educational effectiveness when compared with other industrialized countries around the world (U.S. Department of Education, 1983). This commission produced the Nation at Risk report which reinforced rising concern. While this report was not embraced by all, it did lead to a call for educational reform and associated initiatives. Varying innovations and potential solutions surfaced, yet the United States still did not gain ground with regard to standardized test scores when compared with other countries of the world (U.S. Department of Education, 1983).

In more recent years, standards have guided K-12 reform movements in the U.S. Change has historically begun with the construction of common standards in core academic subjects to specify what students should know and be able to do. Standardized assessment instruments have been developed in direct relationship to established standards, and goals are set which identify expectations for performance on such assessments. These actions are guided by the theory that student learning will be improved as teachers subsequently align their instruction with identified standards and assessment instruments (Polikoff, 2012). Instructional alignment becomes the mediating variable between a standards-based theory for improved student learning and the actual student performance results and outcomes (Polikoff, 2012).

In 2002, the No Child Left Behind Act was signed by President Bush. This legislation supported standards-based educational reform which included setting high
standards and establishing measurable goals, and linking federal dollars to student outcomes on standardized assessments (NCLB; Public Law 107-110). Individual states were entrusted to enact the requirements of the NCLB act, which included administering assessments to all students at select grade levels. NCLB required schools to show adequate yearly progress (score improvement) for the select grade levels from one school year to the next.

While NCLB recognizes the right of each child to learn and be held to high academic standards, and requires all results be disaggregated by multiple variables (including race, ethnicity, socioeconomic status, disability, and English language learner status), some question NCLB’s effectiveness. Arguments are made that implementation has been inconsistent at the state and local levels, and that mandates required by the act are remedies driven more by ideology than by scientific, educational research. Concerns have also been expressed regarding inadequate funding to implement additional testing, accountability measures, proven reforms, and appropriate mediation (Borkowski & Sneed, 2006).

While there are concerns with standardized testing serving as a vehicle for assessing how a school district, state, and the entire U.S. educational system is or is not progressing, such assessments offer a snapshot in time. Given the data we do have, the calls for reform have not lessened and have raised additional questions regarding the need for consistent core subject-specific standards, as well as the need for alternative approaches to educational delivery (Fuchs & Deshler, 2007). At the same time, local,
state, and federal governments, as well as the business community, have called for a skilled workforce poised to meet the demand for the jobs of tomorrow.

Indeed, the argument has been made from a “quality” perspective that legislators and educators alike should not be viewing reform from a one-size-fits-all lens. Rather, many educators argue that each and every student should be met at his/her most effective place for learning (Noddings, 2005). Career and Technical Education (CTE) is an educational delivery method which supports this quality argument, by providing an educational vehicle for students via an alternative, less traditional course. Students receive training in a specific skills pathway with practical application of core subject material. In addition, they gain exposure to real-world working environments through center facilities and equipment, as well as job-shadow, internship, capstone, and other work-based learning experiences (Alfeld, Charner, Johnson, & Watts, 2013).

CTE centers are separate regional high schools, or are schools within schools, that often take the quality approach of teaching the whole student. They incorporate standardized testing, but do not limit themselves to a single parameter with regard to assessment of learning outcomes (Noddings, 2005). CTE centers are tied to state and federal funding, including the Carl D. Perkins Career & Technical Education Act of 2006, which requires varied, quality-focused documentation ensuring student access to current equipment, technology, related work-force environments, and instructional staff (U.S. Congress, 2006). Business and industry have embraced these quality initiatives as needed for both their customers and employees. Yet, not enough is known about what performance indicators are being used to judge excellence within CTE centers.
CTE centers often have a close alliance with business organizations of varying size and product offerings within local business communities. Many such business organizations have sought quality award designation, either through their industry, or a more wide-reaching quality designation, or both. For example, this could include accreditation such as the Joint Commission on Accreditation of Health Care Organizations and its review of health care systems in that quality-minded health care systems frequently seek multiple quality designations or awards. They may highlight specific services offered (e.g., heart centers, children’s hospitals), seek top 100 national designation based on the size and scope of their organization, or they may look to a more macro award which exemplifies excellence throughout the entire system/organization. Manufacturing and other industries also seek industry-specific and/or more macro designations such as ISO 9000. A premiere designation sought by many business organizations/institutions in varied sectors is the Malcolm Baldrige National Quality Award.

The Malcolm Baldrige Quality Award was created at a time of increasing global competitiveness and growing awareness of the need for quality initiatives within business organizations. It was developed as a tool for organizations to not only assess their quality performance, but also the effectiveness of specific quality initiatives (University of Wisconsin-Stout, 2012). This award was named in honor of Malcolm Baldrige, former U.S. Secretary of Commerce from 1981 to 1987, who raised the question of American preparedness and competitiveness with regard to quality initiatives (University of Wisconsin-Stout, 2012).
The awards were created in 1987 and are presented to organizations in recognition of outstanding achievement in product and service quality. They provide a model for organizations striving to improve quality in all areas of operation. In 1999, categories were added for education and health care, and in 2004, a category was added for non-profit organizations (University of Wisconsin-Stout, 2012). Currently, the Baldrige Award is given annually by the President of the United States to no more than three winners in each of the following categories: manufacturing, service, small business, education, health care, and nonprofit (University of Wisconsin-Stout, 2012).

The Baldrige Award Criteria Categories include: awareness of quality as an increasingly important element in competitiveness, understanding of the requirements for quality excellence, and a sharing of information on successful quality strategies and on the benefits derived from implementation of these strategies (English, 1991). To be considered for the award, companies must complete a comprehensive self-appraisal which is reviewed by designated Baldrige volunteer professionals, followed by an on-site audit.

Performance excellence, also known as Total Quality Management (TQM), has been defined by many. The Baldrige Organization (National Institute of Standards and Technology [NIST], 2013) refers to performance excellence as an integrated approach to organizational performance management that results in: (a) delivery of ever-improving value to customers and stakeholders, contributing to organizational sustainability; (b) improvement of overall organizational effectiveness and capabilities; and (c)
organizational and personal learning. Performance excellence is recognized by business and industry as a priority in today’s global, competitive marketplace (NIST, 2013).

The Baldrige Award was not only created to afford recognition, but also as a way to stimulate competitiveness between U.S. firms and other countries at a time of increasing global competitiveness (Lucas, 2008). Industry and government leaders of the early and mid-1980s saw that renewed emphasis on quality was no longer an option for American companies. Many companies of that time either did not acknowledge the need for a quality emphasis or did not know how to undertake a quality initiative. The Baldrige Award was therefore established to provide a standard of excellence that would help U.S. organizations achieve world-class quality.

Since its inception, the Baldrige Award and associated criteria have proven to be very useful tools for those in the corporate sector who are seeking to improve their products and services (Lehr & Ruben, 1999). In a report, Building on Baldrige: American Quality for the 21st Century, the Private Council on Competitiveness shared, “More than any other program, the Baldrige Quality Award is responsible for making quality a national priority and disseminating best practices across the United States” (NIST, 2003, p. 1). While there are those who would argue in favor of other quality awards and their associated criteria, Baldrige has endured as a recognizable quality standard since 1987.

Following the establishment of the Baldrige Award for Education, some districts began to translate and apply the criteria to their organizations, and states began to include educational institutions in their eligibility for state quality awards based on the criteria
Given their close relationship with local business and industry, CTE centers also began integrating performance excellence and quality measures into their programs (Berry, 1997). This included school improvement, systems thinking, and strategic planning that is driven in part by changing state and national philosophies, legislative directive, and by accreditation processes and procedures (AdvancED, 2012).

Given CTE centers’ multi-dimensional approach to education, including ongoing feedback from advisory and local business community members as to skills needed for the workforce of today and the future, such centers might be the type of educational organization to pursue the Malcolm Baldrige Quality Award in Education. Yet, of the 1,099 applicants for all categories within the Baldrige Award during 1999 to 2006 (the last years for which there is complete data), only 134 applicants came from the education sector. Of these 134 Education Award applicants, there were four winners at the K-12 level or about 3% of such applicants (NIST, 2013), and there have been three additional winners since that time. It is unknown the number, if any, of CTE centers applying for the award at the secondary level (NIST, 2013).

**Problem Statement and Research Questions**

Embedded design features within CTE centers mean that such centers are well-postured for application and pursuit of the Malcolm Baldrige National Quality Award in Education. For example, CTE centers serve as a gateway to direct employment or postsecondary education following high school (Alfeld, Charner, Johnson, & Watts, 2013). This gateway may be in the form of immediate employment following high
school graduation or an intermediary step to further postsecondary study (associate, bachelor, or graduate degrees).

In addition, CTE programs teach applied curriculum directly related to specific occupations within a student-selected career cluster. This applied curriculum includes an integration of core subject material (math, science, social studies). For example, students may study the occupation of pharmacy technician, a career pathway in the health sciences cluster, and calculation of medication dosage, an applied mathematical learning experience, would be a part of this curriculum.

Within the State of Michigan, all school districts, including CTE centers, have a history of regional accreditation through the North Central Accreditation Association (which is now a division of the AdvancEd organization). With an emphasis on common core and a nationally-standardized approach to curriculum, Michigan school districts are now working to attain accreditation through AdvancED. Much like the Baldrige Organization’s award criteria, AdvancED places emphasis on results as measured against designated standards and criteria, with a focus on systems thinking and strategic planning. These accreditation requirements mirror standards and criteria outlined by Baldrige as requirements for winning the Baldrige Award (AdvancED, 2012). By achieving accreditation through AdvancED, the argument can be made that Michigan CTE centers are not only structured in academic design, but further postured by accreditation, for potentially pursuing the Malcolm Baldrige Quality Award in Education.

CTE centers are also required by the State of Michigan to have advisory boards with designated chairs to provide leadership, guidance, and feedback for each of the
career cluster areas (State of Michigan, 2012). These advisory boards are composed, in part, of local business community members as well as parents and other stakeholder members. Business and industry provides feedback on curriculum, equipment currently being used by those working in specific career-pathway occupations, and other aspects of instructional delivery. CTE centers also have reciprocal relationships with business and industry, whereby CTE students may represent future employees to the workforce sites where they receive on-the-job training while attending a CTE program (Alfeld, Charner, Johnson, & Watts, 2013).

Yet, when queried multiple times as to the number of secondary school applicants (both traditional high schools and CTE centers), Harry Herz, executive director of the Malcolm Baldrige Quality Award, shared the following, “Unfortunately we don’t keep that kind of information, so it would require going through all the individual applications over the years. I can tell you that most applications from K-12 come from school districts, not individual schools” (personal communication, May 30, 2013). In analyzing the executive summaries provided by the previous seven K-12 Education winners, it was noted that all are districts and not individual school buildings or CTE centers.

Therefore, although CTE centers have a closely-aligned working relationship with the business community, no CTE centers or technical high schools are listed among Baldrige winners. To this end, my study sought to explore the extent to which CTE centers in one state were aligned with the requirements needed to pursue the Baldrige Award, and whether an evaluation of this potential alignment triggered their interest in seeking this award.
To accomplish this assessment, my study asked CTE center leaders and their faculty to assess the current status of their CTE centers against the Baldrige Award Criteria Categories, as measured by the Baldrige Assessment Tool. My study also examined respondents’ previous experience with quality awards and the extent to which organizational assessment influenced CTE center leaders and their faculty in pursuing quality awards in the future. In addition, I explored differences in item responses between CTE center leaders and their faculty and investigated how demographics of these CTE centers influenced the responses of their personnel.

Specifically, given that all Michigan CTE centers are now required to develop a continuous improvement process within the requirements of the AdvancEd accreditation model, my study explored how CTE center leaders already involved in the AdvancEd accreditation process, viewed their center’s potential to also pursue the Malcolm Baldrige Quality Award. My specific research questions included:

1. To what extent do CTE center leaders and their faculty believe their organizations are aligned with the Baldrige Award Criteria Categories?

2. What previous experience have the respondents had with quality awards, and to what extent does the assessment of their organization via the completion of the Baldrige Assessment Tool influence their interest in pursuing quality awards in the future?

3. Are there any significant differences in item responses between the CTE center leaders and the faculty?
4. To what extent do demographics of the CTE center, including numbers and 
SES of students, number of staff, and location influence CTE center leader and 
faculty responses?

The conceptual framework for my study illustrates Michigan CTE centers and 
their potential alignment with the Baldrige Award in Education (Figure 1), given the 
standards they must meet as part of the AdvancED accreditation process. As depicted by 
the framework, the five standards for AdvancED accreditation appear to align with, and 
mirror, the seven Baldrige Award categories. In addition, the framework also illustrates 
the apparent alignment between the Baldrige Application Categories by industrial sector 
and CTE Career Cluster Areas. My study collected data to address the four identified 
research questions.

<table>
<thead>
<tr>
<th>CTE Centers’ AdvancED Standards</th>
<th>Baldrige Award Criteria Categories</th>
<th>CTE Cluster Areas</th>
<th>Baldrige Application Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Governance &amp; Leadership</td>
<td>- Leadership</td>
<td>- Manufacturing</td>
<td>- Manufacturing</td>
</tr>
<tr>
<td>- Purpose &amp; Direction</td>
<td>- Strategic Planning</td>
<td>- Hospitality &amp; Tourism</td>
<td>- Service</td>
</tr>
<tr>
<td>- Teaching &amp; Assessing for Learning</td>
<td>- Student, Stakeholder, &amp; Market Focus</td>
<td>- Business Management &amp; Admin.</td>
<td>- Small Business</td>
</tr>
<tr>
<td>- Resource &amp; Support Systems</td>
<td>- Faculty &amp; Staff Focus - Process Management</td>
<td>- Education &amp; Training</td>
<td>- Education</td>
</tr>
<tr>
<td>- Using Results for Continuous Improvement</td>
<td>- Information &amp; Analysis Results</td>
<td>- Health Science</td>
<td>- Health Care</td>
</tr>
</tbody>
</table>

For both comparisons above:

| RQ1: To what extent do CTE center leaders & faculty think this is happening? | RQ3: Differences between CTE center leader & faculty responses? |
| RQ2: Experience with, and interest in, quality awards? | RQ4: Demographic influences? |

**Figure 1. Conceptual Frame for Allen’s 2014 Study.**
As depicted in the Conceptual Framework, standards required for AdvancEd accreditation included: purpose and direction; governance and leadership; teaching and assessing for learning; resource and support systems; and use of results for continuous improvement (AdvancEd, 2012). These closely mirror the seven categories that frame the Baldrige Education Criteria for Performance Excellence: leadership; strategic planning; student, stakeholder, and market focus; information and analysis; faculty and staff focus; process management; and organizational performance results (NIST, 2013). Effective leadership is outlined as essential by both organizations, and the purpose and direction standard of the AdvancED accreditation requirements speaks to the Baldrige category for strategic planning. Teaching and assessing for learning is linked to the student, stakeholder, and market focus Baldrige category designation, and resource and support systems are framed by Baldrige as a part of their faculty and staff focus and process management categories. Both organizations place significant emphasis on information and results and use results to guide strategic planning and continuous improvement efforts.

Similarities also exist between the Baldrige application categories (manufacturing, service, small business, education, health care, and nonprofit) and the 16 CTE career clusters, which included but were not limited to: manufacturing, hospitality & tourism; business management & administration; education & training; health science; and human services.
Summary of Methods

This research was a quantitative analysis utilizing the Baldrige Assessment Tool, a questionnaire based on the seven Baldrige Criteria Categories, and questioning CTE center leaders and their faculty about their organization’s alignment with the seven Baldrige Education Award Categories. Additional data regarding quality awards, and demographics were also collected.

The Baldrige Assessment Tool and supplemental questions were sent electronically to CTE center leaders and their faculty in 55 CTE centers throughout the State of Michigan. Assistance to secure e-mail addresses was sought from the Michigan Office of Career and Technical Education.

Chapter I Closure

This study examined to what extent CTE centers in Michigan are structured in academic design, as further postured by AdvancED accreditation standards, for potential alignment and pursuit of the Malcolm Baldrige Quality Award in Education. Sharing the Baldrige Education Award Criteria, with respect to its potential alignment with the AdvancEd standard requirements, may provide stakeholders with a greater awareness of the award and accompanying criteria. It may also assist stakeholders to assess their organizations against the criteria for this nationally-recognized, prestigious award for quality excellence. Most importantly, the study helped provide research information on this topic for which few previous studies could be found.
CHAPTER II
LITERATURE REVIEW

Based on their academic structure and accreditation standards, Career and Technical (CTE) centers in the State of Michigan may be well postured to pursue application for the Malcolm Baldrige Quality Award in Education. In this chapter, relevant literature regarding the history of the Total Quality Management (TQM) movement of the 1980s, as well as literature which links TQM, Baldrige, and education are examined. Given the close alliance between CTE and business and industry, and with the Baldrige originating in business, literature is also reviewed which specifically looks at the links between these entities.

This review is organized into the following sections: (a) history of TQM, (b) business excellence models, (c) the relationship between practices and performance, (d) recent events in the quality movement in education, (e) CTE career cluster applicability, and (f) the transition from school to work.

History of Total Quality Management

In the mid-to-late 1940s and in the 1950s, Japan took on the task of rebuilding much of its industrial infrastructure, primarily from Tokyo to Yokohama, which had been lost due to the consequences of war. This included acquisition and/or refurbishment of machinery, procurement of supplies and raw materials, construction to house machinery, and the hiring of workers to run the machinery. Workers were in short supply and many of those hired to serve as managers were hired at random and had little to no formal
training with regard to industrial business operations. These workers had backgrounds
that included taking orders, but they had little experience or confidence in giving them.
Japan came to realize that these would-be managers needed more formal training in
industrial management (Fisher & Nair, 2009).

These managers were asked to take part in a series of seminars with industrial
management as the focus. These seminars were organized and delivered by Homer
Sarasohn, a civil engineer who had developed transcontinental microwave transmitters,
and had been designated by U.S. General George MacArthur to oversee a portion of the
industrial rebuilding of post-war Japan. Sarasohn emphasized management functions and
their related parts as systems, which included statistical analysis but were not exclusive of
that analysis. Subsequent seminars included participants who became executives and
rose to prominence with large, influential Japanese businesses such as Sanyo, Sharp, and
Sony (Fisher & Nair, 2009).

As the decade unfolded, and in his desire for himself and for others to learn more,
Sarasohn came to invite Dr. Edward Deming, a noted author on statistical quality control,
to speak to an audience of Japanese engineers and technicians in July 1950. Deming
introduced the Japanese to Joseph Juran’s writings on quality, and during this time, Juran
also spoke with executives and technicians representing Japan’s industrial sector
(Dahlgaard-Park, 2011).

The Japanese seminar participants came to understand the difference in a
theoretical understanding of management principles versus the ability to practically apply
the principals in a way that makes for successful business management and operations.
Sarasohn, Deming, and Juran had all shared that while statistical control was necessary, it alone could not account for sustainability in business (Dahlgaard-Park, 2011). In addition, all three proposed that businesses need to ensure they were offering quality products and services to their customers (Zairi, 2005).

While Deming had no formal background in engineering or line management, he developed 14 principles that encouraged others to teach, consult, and create frameworks representative of today’s quality movement. They include creating a constancy of purpose, adopting the new philosophy, ceasing of dependence on mass inspection, ending the practice of awarding business based on price tag alone, improving constantly and forever the system of production and service, instituting training on the job, adopting and instituting leadership, driving our fear, breaking down barriers between departments, eliminating slogans, eliminating numerical quotas and numerical goals, substitute leadership, removing barriers that rob employees of their right to pride of workmanship, instituting a vigorous program of education and retraining, and involving everyone in the transformation to quality (Metri, 2006).

Deming’s principles were so important that the Japanese refer to the adoption of a scientific approach to problem-solving as the Deming cycle, while Deming credits Walter Shewhart, a statistical control scientist of the 1920s and 1930s, with the creation of this cycle (Fisher & Nair, 2009). The cycle has four steps plan for improvement: do what was planned, check if the results were expected, and take appropriate action (plan, do, check, and act). The Japanese have designated the Deming Prize as their national award for organizations exhibiting total quality philosophies since 1951. The Baldrige Award is
modeled after the Deming Prize, including award philosophy and evaluation procedures. Both the Baldrige Award and the Deming Prize recognize management excellence from a macro perspective that has come to be known as Total Quality Management (TQM).

In 1993, Joseph Bellefeuille, of AT&T Network Systems, shared that the goal of TQM was to create a system of management that focused on customer satisfaction and transformed the corporate culture into one that guaranteed continual improvement. Bellefeuille indicated that there were three critical elements to TQM: customer expectations, full participation, and continuous improvement. He shared that simply stated, “Total Quality Management is an interlocking arrangement of procedures and practices that ensures that all employees in every department are adequately trained and directed to continuously implement aligned improvements in quality, service, and total cost such that customer expectations are met or exceeded” (Bellefeuille, 1993, p. 47).

With customer satisfaction at the core of a TQM initiative, customers like the American Telephone and Telegraph Company (AT&T) and Cadillac have employed directed efforts for soliciting customer feedback. AT&T has conducted customer surveys, customer complaint analysis, and more. The Cadillac Division of General Motors has asked potential customers to take part in in-seat, mock up sessions to get customer reactions before designs are finalized (Ross, 1999).

In his writings, Bellefeuille (1993) emphasized the importance of well designed processes and procedures which work better each time and ensure that the customer is continually satisfied. He went on to add that no one understands the pros and cons of a
process better than the individual working with the process. To that end, he shared that it imperative that when undergoing a quality initiative, that a company should involve everyone.

More recently, Evans and Lindsay (2009), Prybutok and Cutshall (2004), and Yang (2009), have written that quality has become an essential element for organizational competitiveness, especially with regard to improving customer expectation and organizational performance. Yang goes on to share that Quality Management (QM) links all internal and external functions and parties within an organization. Evans and Lindsay indicate that quality improvement is imperative for success in the global market and that most U.S. firms have introduced a number of internal quality improvement initiatives to satisfy external customer need.

As the quality movement unfolded from the early years of Deming’s work with the Japanese in the 1950s to present (and came to be known as TQM), businesses in the U.S. and around the globe came to embrace the macro, systems approach to quality management. These businesses sought business models to provide example of accomplishment in quality and performance excellence (Yang, 2009).

As quality management practices continued to grow, organizations looked to various business sectors to identify other organizations that had adopted successful quality reforms. Examples of business excellence models began to surface such as those which follow.
Business Excellence Models

Lee and Lee (2012) and Sampaio, Saraiva, and Monteiro (2012), examined the relationships between various designated quality awards. In their study, *A comparison and usage overview of business and excellent models*, Sampaio et al. compared the Malcolm Baldrige Award, European Quality Award, Deming Prize, and the Iberoamerican Prize. They found criteria common to and between awards, and that all awards listed results as one of their criteria. While Sampaio et al. share that competitive advantage can be gained through the use of one or more of the business excellence models, they also note that advantage also depends on the individual performance of each worker and the organizational infrastructure that supports the company.

Sampaio et al. (2012) note that, “excellence models provide personal improvement opportunities in leadership, a structured holistic approach to organization improvement, benchmarking opportunities, and access to best practices” (p. 196), and go on to share that, for any of the models, the assessment process provides a unique training experience that allows managers to understand and align objectives, strategies, and supported approaches with teams and goals. The authors also share that good companies personalize the model(s) they adopt.

The Sampaio et al. (2012) study cites work by Hendricks and Singhal (2001) which indicates strong evidence that companies winning quality awards outperform non-awarded firms on operating, income-based measures. They also found that the stock market reacts positively to quality award announcement as quality seems to improve as a result of quality model implementation.
Lee and Lee (2012) compared six prominent quality awards and their common and differing criteria. As with the Sampaio et al. (2012) study, all six awards did place emphasis on results and identifying strategies and approaches that lead to positive results. In addition to the Malcolm Baldrige Quality Award, the Lee and Lee study also compared the Deming Award, European Foundation for Quality Management (EFQM) Award, Canadian Award, Australian Award, and the China Quality Award. These awards were analyzed through author-designated criteria, including: (a) leadership, (b) strategy, (c) customer, (d) employee, (e) information and knowledge, (f) process, and (g) performance. The authors did note that these quality award criteria have regularly undergone change to reflect new demands of changing market environments. They indicate these changes allow future studies to adopt quality frameworks according to industry (Lee & Lee, 2012).

For the Lee and Lee study (2012), the researchers considered 155 Baldrige Award related articles and 151 European Foundation for Quality Management related articles which were published in scholarly, peer-reviewed academic journals and had cited references. They classified the papers according to the business sector, including a sector for education. They found that that both education and health care related quality studies have steadily increased for both the Malcolm Baldrige National Quality Award and European Foundation for Quality Management awards and have now become the most commonly studied and commonly used quality award areas in the world, based on the number of quality awards given (Lee & Lee, 2012).
While the largest number of award winners for both the Malcolm Baldrige National Quality Award and European Foundation for Quality Management awards has been in the manufacturing sector, the number of manufacturing firms winning the Baldrige Award in the U.S. has decreased steadily during recent years, while remaining stable for European winners of the EFQM award. The Lee and Lee (2012) study also noted that service sector employment has increased dramatically over the last 30 years in both the U.S. and in Europe. The authors indicate that Quality Management is no longer specific to manufacturing because it has become a necessity for global competitiveness in multiple sectors. Both the Sampaio et al. (2012) and Lee and Lee studies note the potential for global recognition that may be afforded by winning quality awards, and that there are additional quality award recognitions beyond those compared in their studies.

**The Relationship between Practices and Performance**

In an effort toward a greater understanding of what recognized quality and performance excellence represent, many studies have examined the relationships between managerial practices, quality dimensions, and business performance. For example, Samson and Terziovski (1999) examined the relationship between TQM practices and operational performance of a large number of manufacturing companies, focusing on the relationship between practices, individually and collectively, and performance outcomes and award categories. In their study, Samson and Terziovski used a large data base of 1,200 Australian and New Zeeland manufacturing organizations. The study showed a significant, cross-sectional relationship between TQM practice intensity and a significant
proportion of variance in performance. The categories of leadership and customer focus were the strongest significant predictors of operational performance.

In *Customer Centered Six Sigma*, Naumann and Hoisington (2000) describe an empirical study conducted at IBM’s AS/400 Division in Rochester, MN, a 1990 winner of the Baldrige Award. Using ten years of data and 50 key measurements, they demonstrated strong correlations and causal effects between market share, customer satisfaction, productivity, warranty cost, and employee satisfaction.

Using the same ten years of data, Hoisington and Huang (2000) also studied IBM’s AS/400 Division and examined the relationship between revenue growth and satisfaction. They found that 95% of revenues came from customers who were very satisfied and satisfied (top two of five options). The ratio of revenue growth between very satisfied and satisfied customers was 3:1. Hoisington and Huang also noted that the more satisfied customers were, the more loyal they remained to doing business with IBM’s AS/400 Rochester Division. It took some time to come to these findings as customers repurchase major computer equipment in cycles of about 18 months. This led to the determination by IBM-Rochester that if customer satisfaction could be improved one percentage point, an additional $257 million in revenue could be generated over five years.

Norreklit (2000) wrote a paper on the relationship between customer satisfaction, value and loyalty, and financial performance using the lens of the Balanced Scorecard. He indicated the Balanced Scorecard contains outcome measures (financial, customer, internal business process, and learning growth perspectives) and the performance drivers
of outcomes linked together in cause and effect relationships. Norreklit also notes that
the Balanced Scorecard aims to be a feed-forward control system as well as a strategic
test control system for aligning personal and departmental goals. In his paper, Norreklit goes
on to share that the Balanced Scorecard allows managers to link strategy to operational
metrics in an understandable and influential fashion.

In his presentation to the American Society for Quality, Brandt (2000) shared that
there were two basic approaches for linking measures of customer satisfaction, value and
loyalty, to market and financial performance. The two approaches are project and direct
linkage, each of which has its strengths and weaknesses. And, Naumann and Hoisington
improvement, and financial results on the relationships between customer attitudes and
market share/financial performance. The authors place heavy emphasis on the
consideration and implementation of customer input throughout a quality reform process.
Such knowledge is relevant to my study because it provides historical narrative on what
major players in business and industry have studied and shared regarding key elements
that lend themselves to effective quality reforms. Let us now examine how education has
taken these findings and applied it to their sector using the Baldrige framework.

**Recent Events in the Quality Movement in Education**

The quality movement has picked up rapidly in the education sector. Arif and
Smiley (2003) note the following reasons for the incorporation of quality initiatives in
education: declining enrollments, declining quality, facilitating change, changing
demographics, advancing technology, competition among institutions, employers
demanding better graduates, declining retention rates, student dissatisfaction with overall service quality, and the costs associated with educational delivery. Arif and Smiley go on to write about the University of Wisconsin at Stout, a Malcolm Baldrige Quality Award Winner in Higher Education. They indicated that the University of Wisconsin at Stout was a recipient of the award in great part because of their ability to document the following five processes with their organizational system including strategic planning, budget, career center, information services, and the university outreach center.

Overall, there are few studies that fully address Baldrige in the area of education, and those studies have been primarily conducted on institutions of higher education. Evans (2004), in his empirical study of the relative emphasis and types of performance measurements and analysis approaches used by organizations in manufacturing, service, and for non-profit (including education and health care sectors), initially discussed the Baldrige and higher education by relating it to learning and curriculum issues, and identifying what higher education should be teaching based upon a survey of 13 Baldrige winners. Evans shared that companies attach the most importance to individual employee’s quality attitude. He found the most highly valued knowledge, skills, and attitudes were customer orientation, continuous process improvement, and teamwork. His results go on to suggest that organizations with more mature performance measurement systems, such as the Baldrige, report better results in terms of customer, financial, and market performance.
Weinstein, Petrick, and Saunders (1998) focused their study on the range of TQM courses available to students in higher education. Their study was conducted in follow up to the Evans (2004) study and confirmed his findings that higher education, based on the number of graduates who had taken part in post-program, company-sponsored TQM training, was insufficiently covering the main expectations of business or not covering them at all. They identified an apparent gap between the Baldrige Award winners’ perceptions and the emphases being placed in higher education. Weinstein, Petrick, and Saunders called for greater awareness of business needs and improvement of courses.

While developing an educational curriculum based upon Baldrige principles has received attention, the actual application of the concepts as a part of the educational delivery process is not readily evident in the literature. An exception to this is a study conducted in 2004 by several faculty members in the Department of Management at DePaul University. These faculty members designed, developed, and delivered course material using the Baldrige framework, both as part of the structure and as a focal point in three individual classes (Belohlav, Cook, & Heiser, 2004). As post-course data were examined, it was noted that the instructor remained constant, and that courses were delivered in a traditional environment within relative temporal proximity to each other and in chronological order. All were held within a similar time frame. Students in the Corporate Strategy course consisted of a variety of majors while students in the other two courses were single major.
Post-course evaluations were conducted to analyze student feedback regarding their perceptions as to the relevance and usefulness for each of the courses. Students did note limited knowledge of the Baldrige prior to discovery through course content. Comparisons were made with students in the same courses who did not receive the additional exposure to the Baldrige framework and core values. The evaluation had two parts, a traditional survey as well as an area for student comment. The findings demonstrated that while there was no statistical significance to the survey findings between the groups who had received the additional Baldrige content and those who did not, the students who had taken one of the three courses that incorporated the Baldrige framework and core values consistently had more comments to share regarding their experiences with the course and the real-world applicability of the content when compared with students who had not had similar exposure. Instructors noted the value-added by the depth of these comments as it assisted with future quality course improvements. Instructors concluded that end-of-term student evaluations for the courses that included exposure to Baldrige led to a higher level of student engagement in the learning process as evidenced by more abundant and higher-quality feedback to the instructors (Belohlav et al., 2004).

Another example of use of the Baldrige framework in higher education was the Excellence in Higher Education framework (EHE) developed by Rutgers University (Lehr & Ruben, 1999). The EHE was created using the Baldrige framework as an originating reference resource. While the EHE was primarily developed to meet the needs of four-year colleges and universities, it provides educational institutions with an
alternative self-assessment tool, with a focus on identification and prioritization of improvements efforts. EHE can be used to integrate or complement approaches such as self-studies, external reviews, management audits, accreditation reviews, and strategic planning as well as providing an assessment framework that helps to ensure a proactive, external focus for the organization. Some of the other goals of EHE include the following: (a) heightened awareness of issues related to higher education quality and communication assessment and improvement, (b) highlighting organizational strengths and areas for improvement, (c) providing baseline measures and a standard of comparison, (d) facilitating communication and benchmarking within and across units and institutions, (e) broadening the engagement of faculty and staff in assessment and strategic planning, and (f) establishing unit “ownership” of quality initiatives. As with Baldrige, the EHE has a seven category framework including leadership, planning, service orientation, information and analysis, faculty, staff, and workplace climate, process management, and excellence levels and trends. Rutgers used the Baldrige framework to create something more specialized and specific to the needs of their respective institution (Lehr & Ruben, 1999).

Winn and Cameron (1998) also examined the validity of the relationships among the dimensions of the Baldrige using data from higher education. They developed a survey instrument of the processes, practices, and outcomes of quality at a large Midwestern university in the U.S. Through use of regression analysis they determined that the relationship between the leadership dimension and each of the four system dimensions was strong and statistically significant. They concluded that the assumed
relationship between an organization’s leadership and each of the quality processes was definitely supported.

Let us now turn to previous studies involving the Baldrige Award and K-12 Schools. In *The Promise of Baldrige for K-12 Education, ACT Policy Report* written by Walpole and Noeth (2002), the report noted two studies which attempted to investigate process change across multiple educational institutions. While both studies had relatively small sample sizes, they looked at process change across multiple institutions including urban, suburban, and rural K-12 school districts of diverse sizes. One study: Horine, Frazier, and Edmister (1998) examined leadership through the lens of implementation of Baldrige, while the other, Detert, Kopel, Mauriel, and Jenni (2000), examined quality from a broader perspective focusing on districts with stated commitments to quality improvement.

The 30 K-12 districts in the first study by Horine, Frazier, and Edmister (1998) had averaged 3.6 years of working to implement Baldrige, with 87% beginning their efforts at the district level. Senior administration in these districts was very involved and committed to Baldrige. The majority of districts received training in continuous improvement principles, and leadership teams of administrators, teachers, and support staff focused on implementation (Walpole & Noeth, 2002). Over 90% said they gathered input from various constituencies for the district’s strategic plan, disseminated it widely, and were trained and engaged in implementing school goals. Findings of the study indicated that 76% of the districts reported that student performance, including test scores, had shown improvement.
Weakness of the study was noted in the failure of schools to provide evidence of actual core performance change, high performance levels, positive trend data, and related school comparisons. While this report did provide some much needed information on quality implementation in multiple K-12 districts, it was also shared that more definition and substantiation was needed (Walpole & Noeth, 2002). Despite these limitations, Horine and her colleagues (1998) believe that Baldrige has much to offer K-12 schools that desire improvement.

The second study in the ACT Policy Report of 2002 was by Detert, Kopel, Mauriel, and Jenni (2000), and focused on ten high schools over four years, using both quantitative and qualitative methods. The researchers believed that improving the quality of core processes, specifically teaching and learning, held much promise for improving education. Their report found that approximately 50% of survey respondents, who represented a national sample of purposefully chosen high schools, indicated that continuous improvement was part of their school or district plan, and that state-mandated tests often prompted implementation of quality processes. In fact, the report went on to indicate that quality initiatives and state-mandated tests were frequently complementary of one another (Detert et al., 2000).

The data in the Detert et al. (2000) study showed a low to moderate level of implementation by teachers. Teachers spoke of quality initiatives as separate from instruction, and the data showed a low to moderate level of implementation by teachers from the ten high schools. Teachers often focused on discipline and classroom management processes rather than on improved teaching and learning (Detert et al.,
While districts in the second study did collect substantial data on many core processes, little systematic analysis and reporting of data occurred. Data did not guide most decision making; but rather, teachers reported making decisions based on intuition (Walpole & Noeth, 2002). As these ACT studies focused on K-12 education in traditional school settings, additional examination of similar studies within CTE centers was sought in the literature.

While research has been conducted within the educational sector to examine the effects of quality reforms using the Baldrige framework, no research could be found that examined these issues within CTE centers. This is despite such centers having an educational delivery framework in place which appears to support the Baldrige framework and its integrated approach to quality reform. CTE curriculum is delivered through program pathways contained within sector-specific career clusters. Let’s take a look at how these clusters assist with delineating program offering and design.

**CTE Career Cluster Applicability**

Similar to the Baldrige having varying application categories based on business sectors (i.e., manufacturing, service, small business, education, health care, and nonprofit), CTE programming is offered through similar designated career clusters (Stipanovic, Lewis, & Stringfield, 2012). There are 16 career clusters recognized by the Department of Education in Michigan (State of Michigan, 2012). Within each of these career clusters, more specific career pathways may be found. For example, in the Health Science cluster, there may be pathways for nursing assistant, pharmacy, laboratory, radiology, rehabilitation. It’s interesting to note the similarities between the Baldrige
application categories and the 16 CTE career clusters, which include but are not limited to, manufacturing, hospitality & tourism, business management & administration, education & training, health science, and human services. These CTE categories appear to mirror the six Baldrige application categories. So what does research reveal regarding the success of such clusters as it relates to quality? Let us look at some studies.

In 2007, Castellano and colleagues selected three schools involved in comprehensive school reform. One school was from a large urban center in the West, with the service sector, retail trade, and government sectors representing the largest employers. The second school was in an agricultural area of the Pacific Northwest, the third was found in a small manufacturing city in the Northeast. The school in the West was employing a career clusters model. While no significant differences were found in graduation rates between the three schools, the cluster graduates outperformed the non-cluster students on several measures relating to transition to postsecondary education, specifically community college where the cluster students outperformed the non-cluster students in each academic subject area (Castellano et al., 2007). More cluster students had post-high school plans, required less remedial coursework, and began college having earned articulated for their cluster coursework.

In their study of transition initiatives, Lekes and colleagues (2007) found that cluster students were more likely to have experienced components specific to clusters including contextualized learning, mentoring, and work-based learning. They, too, noted that cluster students had the advantage of earning articulated college credit prior to postsecondary admission. They shared that this advantage led to an increased chance for
earning a postsecondary certificate or diploma. For those in the technology cluster (specifically in information technology), there was a 4.1% increase in completion, from 17.2% to 21.3% (Lekes et al., 2007).

In a study examining the impact of CTE on high school labor market success, Bishop and Mane (2004) conducted a 12-year, international, cross-sectional and longitudinal study which found that students with nations enrolling a large proportion of upper-secondary (juniors and seniors) in CTE programs, and devoting about one-sixth of their time in high school to CTE courses, had higher school attendance rates and higher upper-secondary completion rates. These nations’ students also earned at least 12% more after graduating from high school, and about 8% extra seven years later. These higher earning percentages held true for students who had or had not attended postsecondary education. Computer-related CTE courses were found to have particular earnings benefit.

As previously shared, Baldrige places emphasis on results. In the 2004 *National Assessment of Vocational Education: Final Report to Congress* (U.S. Department of Education), it was reported that students with CTE academic concentrations increased their 12th grade test scores on the National Assessment of Educational Progress (NAEP) by about eight scale points in reading and 11 points in math, as compared with students who took few or no CTE courses who increased their reading by four points, and no point increase in math. The Southern Regional Education Board reported similar findings sharing that for students in schools that had rigorous academic programs integrated with
CTE programs, scores were higher in reading, math, and science when compared with those that did not (Bottoms, Presson, & Han, 2004).

In a qualitative study conducted by Casale-Giannola (2012), two different vocational/technical high schools were examined. One school was in a suburban setting and had 350 students, the other was inner-city with more than 600 students. Thirty-seven academic classes and 30 vocational/CTE classes were observed in varying cluster areas. In this study, the researcher examined the inclusion of traditional content areas (math, science, English, social studies, health, and one foreign language class in one school) into vocational programming and vice versa. Fifty-five participants took part in the Casale-Giannola study which incorporated 14 co-teaching teams. The participants included 15 content area teachers, 11 special education teachers, and 20 vocational teachers. In addition, one learning consultant, five district supervisors (four academic, one vocational), one study team member, and the author took part (Casale-Giannola, 2012).

Observation, consultation, and surveys were used to compare academic classrooms and vocational/CTE classrooms. Casale-Giannola (2012) found that mutual inclusion into each of the classrooms led to: (a) increased active learning in traditional academic classrooms; (b) basic skills support for all content areas; (c) increased teacher repertoires that supported the performance of students with disabilities; (d) a greater understanding of special education laws, issues, and students; (e) enhanced collaboration between teachers; and (f) improved behavior management and the building of community.
Many CTE centers have traditional content area teachers on staff and utilize inclusion as a part of their vocational programming. In a study conducted by Clark, Dayton, Stern, Tidyman, and Weisberg at the University of California, Berkeley in 2007, they noted centers in various locations throughout the U.S. have what they term a combined college-and-career strategy. Michigan CTE centers (e.g., Allegan Career & Technical Education Center, ACATEC, Kent Career Technical Center, KCTC) also have traditional content area, highly-qualified teachers on staff and have adopted this inclusive approach (State of Michigan, 2012). Casale-Giannola’s findings (2012) would appear to reinforce that these inclusive CTE centers would be particularly viable and potentially strong applicants for the Baldrige Award in Education.

Upon completion of a CTE program via a career cluster, students look to make the post-high school transition. To fully appreciate the far-reaching scope of use of the Baldrige in an educational setting, let us look at what the literature has to share regarding student success and endeavor following their high school careers.

**The School-to-Work Transition**

As noted in chapter I, CTE programs offer opportunities for students to take part in real-working working environments, including job-shadow, internship, and capstone experiences. Given the Baldrige Award’s business origins (manufacturing, service, small business) and given the inter-relatedness of the links between business and CTE programming, it is not surprising that CTE programs support the transition from school to work. Reports on these transitions, which indicate the importance of business skills
learned as a part of CTE programming, would suggest further support for CTE Center application for the Baldrige Award.

In their report, *Career & Technical Education and School-To-Work at the end of the 20th Century: Participation and Outcomes*, Stone and Aliaga (2005) used data from the National Longitudinal Survey of Youth (NLSY97) conducted in 1997. The authors indicate that LNSY97 is a database of a nationally representative sample of approximately 9000, 12-to-16 year olds (as of December 31, 1996) which was compiled by the Bureau of Labor Statistics (2002) to document the transition from school to work and into adulthood.

Stone and Aliaga (2005) examined participation in CTE and school-to-work activities and explored whether school-to-work activities have extended beyond the traditional CTE programming base to become part of the academic experience for all high school students. They differentiated CTE academic programming from real-world working environment experiences and termed these experiences as CTE-related activities. They found evidence of a positive relationship between participation in CTE and school-to work and measures of high school achievement (e.g., graduation rates).

While Stone and Aliaga (2005) found that CTE engaged a large number of students across the U.S, they also noted that only a modest proportion reported participating in a school-to-work activity during their high school career. By comparison, CTE programs in the State of Michigan receiving vocational funding are required to have each of their students participate in at least one school-to-work (also called work-based learning) experience as a part of their vocational program (State of Michigan, 2012).
In their study, Stone and Aliaga (2005) found the odds more than 50% greater for participation in school-to-work activities for students in CTE programs versus their counterparts who were designated as primarily academic concentrators. They also share that graduation rates were higher for students who participated in school-to-work activities than for those who had not.

In another study, Packard, Leach, Ruiz, Nelson, and DiCocco (2012) conducted a study entitled, “School-to-Work Transition of Career and Technical Education Graduates,” which analyzed the career development of CTE high school students during their school-to-work transition. The authors specifically looked at adaptability in the presence of barriers. Baseline surveys of 40 graduates (22 men, 18 women) were followed by phenomenological interviews at six months and one year post-graduation. The participants were from working-class families in three CTE high schools in the Northeast within a 100-mile radius. One school was in a moderate-sized urban community (n=10), the second was from a suburban community (n=9), and the third from a rural community (n=21).

CTE graduates in the study discussed how relevant work experience in their programs influenced both their school-to-work transitions and career goals. The graduates noted that in the face of job loss they were able to adapt by changing career goals to a field where work was available. For some of the students that experienced job loss, skills learned in CTE programs served as a backup plan. CTE graduates become skilled in a trade and most have relevant work experience. Following graduation, these graduates noted that job relevancy propelled their continued career development. As
indicated by Savickas (2005), career adaptiveness is an important element in the
collection of a career narrative.

Packard et al. (2012) found that not all graduates had to adapt to a setback as
relevant employment was in place, and share that the school-to-work and need to adapt
are influenced by the strength and longevity of work-school partnerships, not simply by
individual strategies or behaviors. The authors also shared that, “by seeking CTE
graduates with workplace experience, workplaces can leverage the employees’
experience but also support their continuous growth in the company” (p. 143).

**Summary of the Literature Review**

This review explored the origins of TQM and performance excellence from its
origins to present day applicability. In simultaneous association, this review also
examined the origins of the Malcolm Baldrige National Quality Award and the
accompanying criteria and framework. A review of the literature yielded a number of
research studies which examined varying business excellent models and the symbiotic
relationship between practice and performance. This review went on to subsequently
examine recent events specific to quality movements in the field of education. In
addition, this review, through the lens of the three research questions, continued to make
the argument that Michigan CTE centers are structured and postured for potential pursuit
of the Malcolm Baldrige Quality Award in Education. The argument was held by a
reiteration and further explanation of the career cluster educational delivery approach by
CTE centers in the State of Michigan and with studies of program graduates which
provided evidence of post-program, business community success.
CHAPTER III

METHODOLOGY

The purpose of this study was to explore the extent to which CTE center leaders and their faculty believe that their CTE centers are aligned with the seven Baldrige Education Award Categories. Additional data regarding quality awards and potential post-assessment organizational influences, differences in responses between CTE center leaders and their faculty, and the influence of demographics were also collected.

In order to identify potential alignment with the seven Baldrige Award categories, the study attempted to answer the following research questions:

1. To what extent do CTE center leaders and their faculty believe their organizations are aligned with the Baldrige criteria?

2. What previous experience have the respondents had with quality awards, and to what extent does the assessment of the organization via the completion of the Baldrige Assessment Tool influence their interest in pursuing quality awards in the future?

3. Are there any significant differences in item responses between the CTE center leaders and their faculty?

4. To what extent do demographics of the CTE center, including number and SES of students, number of staff, and location influence CTE center leader and faculty responses?
Research Design Overview

My study was quantitative in design using survey research to gather the perceptions of CTE center leaders and their faculty. According to Creswell (2009), survey research provides a numeric picture of trends, attitudes, and opinions by studying a sample of a designated population. For my study, the designated population was CTE center leaders and faculty from the 55 CTE centers throughout the State of Michigan. In this study, I examined the extent to which CTE center leaders and their faculty believe their centers are aligned with the Baldrige criteria. Descriptive statistics were employed following receipt and compilation of survey responses. As shared by Shavelson (1996), descriptive statistics are a set of concepts and methods which are used to organize, summarize, tabulate, depict, and describe the data collected.

Sample, Population, and Participants

This study surveyed CTE center leaders and their faculty from all of the 55 CTE centers throughout the State of Michigan. CTE center leaders and faculty include principals, assistant principals, department heads, faculty, and paraprofessional faculty. A list of e-mail addresses was drafted using individual CTE center website information, by written request to administrators at individual CTE centers, and with links to public domain information provided by the Career and Technical Education Office of the Michigan Department of Education.

In those instances where e-mail information was not available on a CTE center website or through public domain information, administrators were asked to provide lists of e-mail contact information for their center’s leaders and faculty. Some administrators
requested to personally forward the survey and accompanying e-mail letters to their faculty. These requests were granted as requested, and every effort was made to contact as many CTE center leaders and faculty as possible. This included double-checking each individual e-mail address for spelling and other accuracy. All 55 CTE center leaders and their faculty were invited to participate in the study.

**Instrumentation**

The Baldrige Assessment Tool, an organizationally-designed, public domain survey, was downloaded through the NIST website. This Baldrige Tool solicits responses to statements provided for each of the seven Baldrige Criteria Categories and with emphasis on Baldrige-designated requirements and specifics. There are four to six statements under each of the categories with the exception of the results category which has nine statements. For example, under Category 1: Leadership, the statements address the organization’s mission, vision, and values in addition to a work environment which fosters productivity, communication, and opportunity for individual input.

Baldrige allows for customization of the instrument to meet organizational and/or research need (NIST, 2013). The employee version of this tool was utilized with customized language that specifically addresses CTE centers, their leaders, and their faculty members. For item responses, “organization” is replaced with “my CTE center” and the word “bosses” is replaced with “my CTE center leadership team.” The undecided neutral option on the Tool was removed and replaced with moderately disagree and moderately agree options moving from a 5-point to a 6-point Likert Scale. The six response options are strongly disagree, moderately disagree, and disagree to
agree, moderately agree, and strongly agree. In addition to the items from the Baldrige Assessment Tool, seven additional survey questions were designed to examine previous experience with quality awards and potential post-assessment organizational influences and to solicit demographic information including the following independent variables: number and SES of students, number of staff, and CTE center location. One open-ended question was provided at the end of the survey to allow for additional comment.

I queried Jackie DesChamps (personal communication on February 26, 2014) from the Baldrige Organization regarding the validity and reliability of the Baldrige Assessment Tool. Having worked on the formation of a National Certification Examination for Medical Assistants with the National Board of Medical Examiners, I likened Ms. DesChamps’ description regarding validity and reliability to that same process. National Board Examination Team Members (which included doctors, nurses, and other practitioners as well as educators like from various demographic areas across the U.S.) are asked to develop examination questions applicable to the profession and drawn from segments of the occupational analysis for medical assisting. Members then meet annually in-person in Philadelphia to go over each of the questions and peer review their relevance and language taking into consideration factors such as viable distractors, etc. The team is required to come to consensus decision on each and every question and also on the viability and fairness of the examination as a whole.

Baldrige conducts a similar annual process to ensure the validity and reliability of the Baldrige Assessment Tool. Ms. DesChamps (personal communication on February 26, 2014) shared that while the Baldrige organization once brought stakeholders to the
Baldrige offices in person, the annual consensus review of the Tool is now accomplished electronically on what is known as Improvement Day. The many invited stakeholders are all asked to provide input on the tool and note any changes or areas where they believe greater clarity is required. She noted that there are numbers of successful organizational and other stakeholders who utilize the Baldrige Criteria Categories and have not applied for or received the award.

In 1997, Prybutok and Stafford used the Baldrige Award Criteria Categories as a framework, in an attempt to run reliability and validity testing on a self-assessment questionnaire they developed for the Baldrige Award in Health Care. The content validity was tested by quality award examiners and quality engineers. However, it was reported, that “due to incompleteness of the returned questionnaires, factor analysis, reliability, and validity checks could not be carried out” (Prybutok & Stafford, 1997).

In 1998, Pannirselvam, Siferd, and Ruch also noted that the most fundamental of validity questions on this tool, such as does the instrument measure what it purports to measure, can never be tested empirically so long as the item scores or past award applicants remain confidential. Baldrige continues to employ this confidentiality standard (NIST, 2013).

Given some concerns, studies have been conducted to examine the relationship between elemental requirements of the Baldrige Award Criteria Categories. Jayamaha, Grigg, and Mann (2008) used the Baldrige Framework to develop a self-assessment instrument and collected data from 91 New Zealand, medium-sized service organizations. Of the 13 implied causal relationships within their instrument’s framework, 11 were
statistically significant. Strength in causal relationships within the framework would subsequently suggest strength in the overall instrument.

**Pilot Study and IRB Approval**

The survey used in this study was a core of the instrument created by the Baldrige Organization and utilized by thousands with interest in the award; however, the researcher also elected to test-pilot the customized instrument to four faculty members from CTE centers in the State of Michigan. These four professionals were provided a hard copy of the survey as well as electronic access. They were asked to note general impressions including item readability and areas where they believed greater clarity was required. Their feedback was incorporated into the final version of the survey prior to distribution. The final complete survey and accompanying research proposal were reviewed by the Human Subjects Institutional Review Board (IRB) at Western Michigan University. IRB approval of the procedures, protocols, and methodology was received on April 11, 2014 and prior to e-mail distribution of the survey to CTE personnel. Copies of the HSIRB approval letter, survey instrument, and cover letters can be found in the appendices (A through D).

**Survey Distribution and Data Collection**

To address the four research questions, an e-mail with introductory verbiage, including reason for the study and a link to a web-based survey using Survey Monkey was sent to all CTE center leaders and faculty in the 55 CTE centers located throughout the State of Michigan. Assurances of anonymity and confidentiality were emphasized (see Appendix D).
The survey was distributed to all individuals on the compiled e-mail list. The survey was available to CTE center leaders and their faculty for a three-week window. Results from the web-based survey items were downloaded to SAS statistical software for analysis and interpretation. Descriptive statistics (including means and standard deviations where appropriate) for each category statement were run, as well as inferential statistics procedures.

As CTE center personnel in the State of Michigan are not a stagnant constant, this study assumed that some e-mails and the accompanying web-based survey would be returned/rejected. In a best effort to increase the pool/sample and reach as many CTE center leaders and faculty as possible, the researcher followed up with the CTE center noted to confirm accuracy of e-mail addresses for each of the rejected e-mail addresses. For the non-rejected e-mail addresses, two follow up reminder notices were sent. Copies of the follow up notices are found under appendices. With regard to receipt of tallied responses, original data will be maintained for a minimum of three years under the supervision of Dr. Louann Bierlein Palmer. The researcher (Patricia Crum-Allen) will also maintain copies for the same period of time.

**Data Analysis**

Survey data analysis will incorporate the use of statistics and quantitative inferential statistics to identify relationships. This is visually depicted in Figure 2. Frequencies, percentages, means, and standard deviations were calculated for each of the multiple choice survey items including questions 8 and 9 which address previous experience with quality awards. Trends to identify differences in responses between CTE
center leaders and their faculty with regard to multiple choice questions 2 though 10 were explored using descriptive statistics as well as ANOVA (analysis of variance). The level of statistical significance was established at 0.05. For research question 4, regarding the extent to which demographics of the CTE centers, including number and SES of students, number of staff, and location of the CTE center influence CTE center leader and faculty responses, regression was performed.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Survey Item</th>
<th>Statistics Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do CTE center leaders and their faculty believe their organizations are aligned with the Baldrige Award Criteria Categories?</td>
<td>Questions 2 – 8</td>
<td>Percentages, Means, Standard Deviations</td>
</tr>
<tr>
<td>What previous experience have the respondents had with quality awards, and to what extent does the assessment of the organization via the completion of the Baldrige Assessment Tool influence their interest in pursuing quality awards in the future?</td>
<td>Questions 9 and 10</td>
<td>Percentages, Means, Standard Deviations</td>
</tr>
<tr>
<td>Are there any significant differences in item responses between the CTE center leaders and the faculty?</td>
<td>Question 11 and Questions 2 – 10</td>
<td>Percentages, Means, Standard Deviations (Question 11) and ANOVA (Analysis of Variance)</td>
</tr>
<tr>
<td>To what extent do demographics of the CTE center, including numbers and SES of students, number of staff, and location influence CTE center leader and faculty responses?</td>
<td>Questions 12, 13, 14, &amp; 15</td>
<td>Regression</td>
</tr>
</tbody>
</table>

Figure 2. *Statistics Employed.*

**Limitations and Delimitations**

A limiting factor in this study was the population surveyed. While the researcher made every attempt to reach as many Michigan CTE center leaders and faculty members as possible, there were personnel who elected not to respond to the first and/or second request for completion of the survey. It is also acknowledged that all respondents may not have been fully truthful or forthright in their responses. In addition, some rejected e-
mail addresses were tracked as noted but did not yield a new, viable replacement participant and/or e-mail address. It is not known how lack of full participation from all potential participants may have, or not, skewed the data.

It is also noted that the four CTE centers within the Detroit Public School System did not take part in this study. Prior authorization to conduct research with individuals in these centers was required, which would have taken months to complete without assurance that the research would be approved.

Some of the CTE centers function as a consortium unit, sharing resources and conducting programming in multiple facilities across multiple districts versus a single, technological center building with ancillary programming. Kalamazoo Regional Education Service Agency (RESA) is an example of such a consortium, while Kent Career Technical Center (KCTC) in the Greater Grand Rapids area has a central, technology center building with ancillary study in programming at off-site locations (e.g. aviation programming at the Ford International Airport) (State of Michigan, 2012). This difference in structure did lead to questions from respondents, particularly those in consortium buildings, with regard to clarifying CTE center top leaders and CTE center leadership teams in addressing survey items. These queries were responded to promptly with clarification that designated consortium personnel were among those considered CTE center top leaders and members of the CTE center leadership team. For those that did not seek clarification, some respondents may have considered their individual high school top leaders and/or members of their individual high school leadership team versus those that perform similar duty as a function of a consortium. In lieu of this, some
respondents shared in the open-ended question that they simply did not answer some or all of the questions addressing specific members of leadership, due to the multiple levels of leadership associated with their individual position.

While this study examines the extent to which CTE centers in the State of Michigan are aligned with requirements for pursuit of the Baldrige Awards, and whether an evaluation of this potential alignment triggers interest on the part of CTE center leaders and their faculty to seek this or other quality awards, it is acknowledged that the findings may not be representative of or generalize to CTE centers for other states in the U.S. As indicated in Chapter I, CTE centers receive federal funding based upon the Carl D. Perkins Career and Technical Education Act of 2006. All CTE centers throughout the U.S. are required to follow federal guidelines as mandated by the Act to receive this funding. State funding requirements, however, vary from state to state as do instructional credentials, work-based learning experience requirements, and other CTE-related areas of emphasis.

**Researcher**

The researcher’s background includes a history of seven years of teaching experience at the secondary level as a career and technical education instructor in the health sciences and business pathways. Any biases based on the past working experience of the researcher are acknowledged.

**Chapter III Summary**

This chapter explained the methods and procedures used to analyze the data collected in determining if potential alignment triggers interest on the part of CTE center
leaders and their faculty to seek the Baldrige or other quality awards. The following chapter will present the results obtained using those methods.
CHAPTER IV

RESULTS

My study sought to measure the extent to which CTE center leaders and their faculty believe that their CTE centers are aligned with the seven Baldrige Education Award Categories. In addition, data regarding quality awards and potential post-assessment organizational influences, differences in responses between CTE center leaders and their faculty, and the influence of demographics were also collected and analyzed.

In order to identify potential alignment with the seven Baldrige Award categories, the study attempted to answer the following research questions:

1. To what extent do CTE center leaders and their faculty believe their organizations are aligned with the Baldrige criteria?

2. What previous experience have the respondents had with quality awards, and to what extent does the assessment of the organization via the completion of the Baldrige Assessment Tool influence their interest in pursuing quality awards in the future?

3. Are there any significant differences in item responses between the CTE center leaders and their faculty?

4. To what extent do demographics of the CTE center, including number and SES of students, number of staff, and location influence CTE center leader and faculty responses?
To address the research questions, CTE center leaders and faculty from the 55 CTE centers in the State of Michigan were invited to participate in an online survey during a three week period of time starting in April, 2014. Of the 1,350 CTE center leaders and faculty who were asked to participate, 386 (28.5%) took part in the survey. Eight additional participants entered the survey, but did not consent and exited the survey before responding to any survey items.

Participants had the option of skipping questions or stopping at any point in the survey. As noted in Chapter III, some of the participants did not respond to the questions which specifically addressed CTE center top leaders and/or members of the CTE center leadership team. This appeared especially specific to CTE center leaders and faculty that function in consortium structures where multiple resources are shared across multiple buildings. Some wrote to clarify that the questions were specific to consortium personnel and not individual high school buildings; some did not. Given this, and with respondents having the option of answering or not answering any of the survey items, the response rate varied for items throughout the survey. The only skip question followed the introduction and was the consent to participate. Those that selected “yes” were provided access to all survey questions. Those that chose “no” were forwarded to the end of the survey.

On April 14, 2014, all 1,350 CTE center leaders and faculty were sent e-mail notification inviting them to participate in the survey. One reminder notice was sent in each of the two weeks that followed. All three notices varied in wording and format, and were sent on different days of the week. This was purposefully done in an attempt to
increase the response rate with respect for the varying, individual schedule responsibilities of each CTE center leader and faculty member.

The extent to which CTE center leaders and their faculty believe that their CTE centers are aligned with the seven Baldrige Education Award Categories was the main focus of the data collected in the first portion of the study. The next section of the survey included questions regarding experience with and/or desire to pursue a quality award, followed by questions addressing demographic information specific to the participant’s CTE center. Participants were also asked to identify their career cluster area. The final section of the survey was an open-ended question, with ample text area provided as requested following pilot, which invited participants to share suggestions on what may be necessary to raise CTE center quality awareness.

**Description of the Population**

The target population for my study consisted of CTE center leaders and faculty from all 55 CTE centers in the State of Michigan. The exact number of CTE center leaders and faculty was requested, but not provided by the State Office of Career and Technical Education; however, their assistance with administrator contact information coupled with other available avenues (including website information and direct contact with CTE center principals) did yield a best-available total of 1,350 CTE center leaders and faculty.

The majority of CTE centers in the State of Michigan have two to three administrators per facility (State of Michigan, 2012), not including faculty department chairs. Of the 1,350 CTE center leaders and faculty who were asked to participate, 386
(28.5%) took part in the survey. It should be noted that this 1,350 total is exclusive of the four CTE center leaders and faculty within the Detroit Public School system, which has a block on their administrators’ e-mail addresses for any research requests.

Demographic data were acquired via both fill-in-the-blank and multiple choice options provided in the second part of the survey. As the number of teaching and administrative staff and the number of students represent integral data, categories were formulated after the data were analyzed.

As illustrated in Table 1, and based on the information provided by the 275 survey participants that answered all or most of the demographic questions in April or May, 2014, the largest number of responses come from faculty members, with 198 (72.5%). Paraprofessional faculty member respondents numbered 29 and were the next highest percentage (10.6%). Principal/assistant principal, administrator (6.6%) and department chair and faculty member (6.6%) had 18 respondents each.

Most CTE centers in the State of Michigan (84.2%) had between 10 to 99 faculty members. The largest percentage (34.4%) represented 25 to 49 faculty members, with 50 to 99 (26.0%) being the next highest percentage. With regard to students, most CTE centers had between 100 to 1,999 students. The largest percentage (36.5%) represented CTE centers of 500 to 999 students, with 1,000–1,999 (29.5%) being the next highest percentage.

Further demographic data reveal that the majority of students in these CTE centers (87.2%) came from lower-middle class (56.9%) or middle-class (30.3%)
Table 1

**CTE Center Demographic Information (n=275)**

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>273</td>
<td></td>
</tr>
<tr>
<td>Principal/Assistant Principal, Administrator</td>
<td>18</td>
<td>6.6</td>
</tr>
<tr>
<td>Department Chair &amp; Faculty Member</td>
<td>18</td>
<td>6.6</td>
</tr>
<tr>
<td>Faculty Member</td>
<td>198</td>
<td>72.5</td>
</tr>
<tr>
<td>Paraprofessional Faculty Member</td>
<td>29</td>
<td>10.6</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>3.7</td>
</tr>
<tr>
<td>Teaching and Administrative Staff</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>0-9</td>
<td>19</td>
<td>7.7</td>
</tr>
<tr>
<td>10-24</td>
<td>59</td>
<td>23.9</td>
</tr>
<tr>
<td>25-49</td>
<td>85</td>
<td>34.4</td>
</tr>
<tr>
<td>50-99</td>
<td>64</td>
<td>26.0</td>
</tr>
<tr>
<td>100 &amp; over</td>
<td>11</td>
<td>4.5</td>
</tr>
<tr>
<td>Did Not Know</td>
<td>9</td>
<td>3.6</td>
</tr>
<tr>
<td>Students</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>0-99</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>100-499</td>
<td>46</td>
<td>19.1</td>
</tr>
<tr>
<td>500-999</td>
<td>88</td>
<td>36.5</td>
</tr>
<tr>
<td>1000-1999</td>
<td>71</td>
<td>29.5</td>
</tr>
<tr>
<td>2000-4000</td>
<td>22</td>
<td>9.1</td>
</tr>
<tr>
<td>Did Not Know</td>
<td>10</td>
<td>4.2</td>
</tr>
<tr>
<td>Socioeconomic Status of Majority of Students</td>
<td>274</td>
<td></td>
</tr>
<tr>
<td>Lower Class</td>
<td>24</td>
<td>8.8</td>
</tr>
<tr>
<td>Lower-Middle Class</td>
<td>156</td>
<td>56.9</td>
</tr>
<tr>
<td>Middle Class</td>
<td>83</td>
<td>30.3</td>
</tr>
<tr>
<td>Upper-Middle Class</td>
<td>11</td>
<td>4.0</td>
</tr>
<tr>
<td>Upper Class</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Geographic Area of Michigan</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>Southwest Michigan</td>
<td>81</td>
<td>29.5</td>
</tr>
<tr>
<td>Southeast Michigan</td>
<td>82</td>
<td>29.8</td>
</tr>
<tr>
<td>Mid-central Michigan</td>
<td>71</td>
<td>25.8</td>
</tr>
<tr>
<td>Northwest Michigan</td>
<td>26</td>
<td>9.5</td>
</tr>
<tr>
<td>Northeast Michigan</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Upper Peninsula</td>
<td>11</td>
<td>4.0</td>
</tr>
<tr>
<td>Area Surrounding my CTE Center</td>
<td>274</td>
<td></td>
</tr>
<tr>
<td>Urban/Metropolitan</td>
<td>33</td>
<td>12.0</td>
</tr>
<tr>
<td>Suburban</td>
<td>100</td>
<td>36.5</td>
</tr>
<tr>
<td>Rural</td>
<td>141</td>
<td>51.5</td>
</tr>
</tbody>
</table>

*Note:* Not all respondents responded to all items.

backgrounds, while the majority of survey respondents (85.1%) came from the southeast (29.8%), southwest (29.5%), or mid-central (25.8%) areas of Michigan. It is also noted that despite the lack of participation by the Detroit Public School System, the southeast geographic area represented the largest percentage of survey respondents, while the
Northeast area, which has a small number of CTE centers and personnel, is the smallest geographic area (1.5%) found in the study.

The majority of the area surrounding the respondents’ CTE centers (88%) was largely identified as rural (51.5%) or suburban (36.5%). It is acknowledged that the percentage of urban/metropolitan (12.0%) would have likely been higher with the inclusion of the four CTE centers within the Detroit Public School System.

Table 2 indicates that 169 respondents elected to answer this fill-in-the blank question and all but one (Government and Public Administration) of the 16 career cluster areas were represented by these respondents. Health Sciences is the largest cluster area at most CTE centers in Michigan (State of Michigan, 2012), and Health Sciences at 41 respondents (24.3%) had almost triple the next highest number, which was the Transportation, Distribution, and Logistics career cluster area (14 respondents, 8.3%).

Table 2

*Career Cluster Areas (n=169)*

<table>
<thead>
<tr>
<th>Career Cluster Area</th>
<th>Total Respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Sciences</td>
<td>41</td>
<td>24.3</td>
</tr>
<tr>
<td>Transportation, Distribution, &amp; Logistics</td>
<td>14</td>
<td>8.3</td>
</tr>
<tr>
<td>Arts, A/V Technology &amp; Communication</td>
<td>13</td>
<td>7.7</td>
</tr>
<tr>
<td>Architecture &amp; Construction</td>
<td>12</td>
<td>7.1</td>
</tr>
<tr>
<td>Human Services</td>
<td>11</td>
<td>6.5</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>11</td>
<td>6.5</td>
</tr>
<tr>
<td>Business, Management, &amp; Administration</td>
<td>10</td>
<td>5.9</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>10</td>
<td>5.9</td>
</tr>
<tr>
<td>Information Technology</td>
<td>10</td>
<td>5.9</td>
</tr>
<tr>
<td>Hospitality &amp; Tourism</td>
<td>9</td>
<td>5.3</td>
</tr>
<tr>
<td>STEM (Science, Technology, Engineering, &amp; Math)</td>
<td>9</td>
<td>5.3</td>
</tr>
<tr>
<td>Agriculture, Food, &amp; Natural Resources</td>
<td>6</td>
<td>3.6</td>
</tr>
<tr>
<td>Marketing</td>
<td>5</td>
<td>3.0</td>
</tr>
<tr>
<td>Did Not Know, N/A</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Law, Public Safety, Corrections, &amp; Security</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Finance</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Government &amp; Public Administration</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Analysis of Questions

Research Question 1

Research Question 1 examined the extent to which CTE center leaders and their faculty believe their organizations are aligned with the seven Baldrige Award Categories. To address this question, survey questions 2 through 8 asked participants to share the extent to which they agree (or disagree) that each of the category items is occurring within their CTE center. An interval scale was used to answer all these questions, as follows: 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree.

Tables 3 through 9 show the percent responses as they refer to the extent to which CTE center leaders and faculty believe each of the statement items is occurring within their CTE center. Results appear from highest to lowest mean for each statement.

Table 3 illustrates statement items that highlight Leadership, including mission and vision, values, the sharing of information, an empowering work environment, and the querying of personnel for input. All five items had means above the slightly agree (4) level, with CTE personnel indicating that knowing their CTE center’s mission was the highest rated item (M=5.22, SD=1.17). Based upon the two highest scoring personnel responses, it would appear that mission and vision (M=4.88, SD=1.30) are developed and discussed as a part of the culture within many of the CTE centers in Michigan.

Table 4 illustrates statement items that highlight Strategic Planning, including innovation, knowing CTE center plans, flexibility, asking personnel for ideas, and assessment of progress. As with the Leadership category, all items in this category had
<table>
<thead>
<tr>
<th>Criteria Item</th>
<th>1 n (%)</th>
<th>2 n (%)</th>
<th>3 n (%)</th>
<th>4 n (%)</th>
<th>5 n (%)</th>
<th>6 n (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know my CTE center’s mission</td>
<td>8 (2.8)</td>
<td>7 (2.4)</td>
<td>8 (2.8)</td>
<td>28 (9.6)</td>
<td>80 (27.5)</td>
<td>160 (55.0)</td>
<td>5.22 (1.17)</td>
</tr>
<tr>
<td>I know my CTE center’s vision</td>
<td>12 (4.1)</td>
<td>7 (2.4)</td>
<td>18 (6.2)</td>
<td>49 (16.8)</td>
<td>88 (30.1)</td>
<td>118 (40.4)</td>
<td>4.88 (1.30)</td>
</tr>
<tr>
<td>My CTE center’s top leaders use our values to guide us</td>
<td>14 (4.8)</td>
<td>16 (5.5)</td>
<td>22 (7.6)</td>
<td>53 (18.2)</td>
<td>88 (30.2)</td>
<td>98 (33.7)</td>
<td>4.65 (1.40)</td>
</tr>
<tr>
<td>My CTE center’s leadership team shares information about our organization</td>
<td>13 (4.5)</td>
<td>17 (5.9)</td>
<td>30 (10.3)</td>
<td>44 (15.2)</td>
<td>92 (31.7)</td>
<td>94 (32.4)</td>
<td>4.61 (1.41)</td>
</tr>
<tr>
<td>My CTE center’s top leaders create a work environment that helps us do our job</td>
<td>18 (6.2)</td>
<td>23 (7.9)</td>
<td>26 (8.9)</td>
<td>47 (16.2)</td>
<td>84 (28.9)</td>
<td>93 (32.0)</td>
<td>4.49 (1.51)</td>
</tr>
<tr>
<td>My CTE center’s leadership team asks what I think</td>
<td>23 (8.0)</td>
<td>30 (10.4)</td>
<td>26 (9.0)</td>
<td>55 (19.1)</td>
<td>76 (26.4)</td>
<td>78 (27.1)</td>
<td>4.27 (1.58)</td>
</tr>
</tbody>
</table>

*Note:* Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6

Means above the slightly agree (4) level. The data appear to indicate that CTE centers are encouraging innovation (M=4.54, SD=1.50), and that personnel within these CTE centers know the parts of the CTE center’s plans that affect their work (M=4.44, SD=1.40).

Two similar items from both the leadership and strategic planning categories had to do with statements that address whether CTE center personnel are included in quality discussions and planning. It is interesting to note that while not the highest mean in either category, the overall mean for each was above slightly agree and both were close in number. Under Leadership, the statement reads, “My CTE center’s leadership team asks what I think” (M=4.27, SD=1.58), and under Strategic Planning, the statement reads,
Table 4

Strategic Planning Criteria Items (n=292)

<table>
<thead>
<tr>
<th>Criteria Item</th>
<th>1 n (%)</th>
<th>2 n (%)</th>
<th>3 n (%)</th>
<th>4 n (%)</th>
<th>5 n (%)</th>
<th>6 n (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MY CTE center encourages innovation</td>
<td>18 (6.2)</td>
<td>17 (5.9)</td>
<td>28 (9.7)</td>
<td>54 (18.6)</td>
<td>72 (24.8)</td>
<td>101 (34.8)</td>
<td>4.54 (1.50)</td>
</tr>
<tr>
<td>I know the parts of my CTE center’s plans that will affect my work</td>
<td>16 (5.5)</td>
<td>17 (5.9)</td>
<td>30 (10.4)</td>
<td>56 (19.4)</td>
<td>100 (34.6)</td>
<td>70 (24.2)</td>
<td>4.44 (1.40)</td>
</tr>
<tr>
<td>My CTE center is flexible and can make changes quickly</td>
<td>22 (7.6)</td>
<td>22 (7.6)</td>
<td>38 (13.2)</td>
<td>55 (19.1)</td>
<td>94 (32.6)</td>
<td>57 (19.8)</td>
<td>4.21 (1.49)</td>
</tr>
<tr>
<td>My CTE center asks for my ideas as it plans for the future</td>
<td>23 (7.9)</td>
<td>31 (10.7)</td>
<td>35 (12.0)</td>
<td>57 (19.6)</td>
<td>68 (23.4)</td>
<td>77 (28.5)</td>
<td>4.19 (1.59)</td>
</tr>
<tr>
<td>I know how to tell if my CTE center is making progress on my work group’s part of the plan</td>
<td>16 (5.6)</td>
<td>35 (12.2)</td>
<td>40 (13.9)</td>
<td>71 (24.7)</td>
<td>72 (25.0)</td>
<td>54 (18.8)</td>
<td>4.08 (1.46)</td>
</tr>
</tbody>
</table>

Note: Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6

“My CTE center asks for my ideas as it plans for the future (M=4.19, SD=1.59). In addition, and with regard to the strategic planning assessment item of knowing how to tell if their CTE center is making progress on their work group’s part of the plan, it was the lowest scoring item (but still came in at just above the slightly agree level, M=4.09, SD=1.46).

Table 5 illustrates statements that highlight Customer Focus, including knowing customers and asking for their input, as well as a statement which addresses CTE personnel being allowed to make decisions that solve problems for customers. As with Leadership and Strategic Planning, all items had means above the slightly agree (4) level.
### Table 5

**Customer Focus Criteria Items (n=290)**

<table>
<thead>
<tr>
<th>Criteria Item</th>
<th>1 (%)</th>
<th>2 (%)</th>
<th>3 (%)</th>
<th>4 (%)</th>
<th>5 (%)</th>
<th>6 (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know my most important customers</td>
<td>1 (0.4)</td>
<td>0 (0.0)</td>
<td>4 (1.4)</td>
<td>21 (7.3)</td>
<td>66 (22.8)</td>
<td>197 (68.2)</td>
<td>5.57 (0.74)</td>
</tr>
<tr>
<td>I regularly ask my customers what they need and want</td>
<td>1 (0.4)</td>
<td>1 (0.4)</td>
<td>12 (4.2)</td>
<td>42 (14.5)</td>
<td>100 (34.6)</td>
<td>133 (46.0)</td>
<td>5.21 (0.90)</td>
</tr>
<tr>
<td>I know who my CTE center’s most important customers are</td>
<td>2 (0.7)</td>
<td>6 (2.1)</td>
<td>17 (5.9)</td>
<td>44 (15.4)</td>
<td>61 (21.3)</td>
<td>156 (54.6)</td>
<td>5.18 (1.10)</td>
</tr>
<tr>
<td>I ask my customers if they are satisfied with my work</td>
<td>2 (0.7)</td>
<td>1 (0.4)</td>
<td>21 (7.3)</td>
<td>59 (20.5)</td>
<td>99 (34.4)</td>
<td>106 (36.8)</td>
<td>4.98 (1.00)</td>
</tr>
<tr>
<td>I am allowed to make decisions to solve problems for customers</td>
<td>5 (1.7)</td>
<td>15 (5.2)</td>
<td>19 (6.6)</td>
<td>50 (17.4)</td>
<td>92 (32.1)</td>
<td>106 (36.9)</td>
<td>4.84 (1.24)</td>
</tr>
</tbody>
</table>

*Note: Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6*

Knowing who their most important customers were (M=5.57, SD=0.74), and asking customers what they need and want (M=5.21, SD=0.90), were the two most highly rated items. Of note, personnel being allowed to make decisions to assist customers was the lowest scoring item in the category; however, it still had a mean (M=4.84, SD=1.24), which would appear to indicate that some leverage was granted in this regard.

Table 6 illustrates statements that highlight Measurement, Analysis, and Knowledge Management items, including measuring work quality and how individual work measures fit a CTE center’s overall improvement measures. This category also addresses the use of information as a vehicle for improvement, as well as knowledge relating to how a CTE center is performing as a whole.
### Table 6

**Measurement, Analysis, and Knowledge Management Criteria Items (n=292)**

<table>
<thead>
<tr>
<th>Criteria Item</th>
<th>1 (n=32)</th>
<th>2 (n=37)</th>
<th>3 (n=39)</th>
<th>4 (n=43)</th>
<th>5 (n=44)</th>
<th>6 (n=44)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know how to measure my work’s quality</td>
<td>3 (1.0)</td>
<td>1 (0.3)</td>
<td>9 (3.1)</td>
<td>39 (13.4)</td>
<td>110 (37.7)</td>
<td>130 (44.5)</td>
<td>5.20 (0.93)</td>
</tr>
<tr>
<td>I can use information to make changes that improve my work</td>
<td>2 (0.7)</td>
<td>4 (1.4)</td>
<td>9 (3.1)</td>
<td>33 (11.3)</td>
<td>114 (39.2)</td>
<td>129 (44.3)</td>
<td>5.20 (0.94)</td>
</tr>
<tr>
<td>I know how the measures I use fit into my CTE center’s overall improvement measures</td>
<td>6 (2.1)</td>
<td>10 (3.5)</td>
<td>28 (9.7)</td>
<td>55 (19.1)</td>
<td>111 (38.5)</td>
<td>78 (27.1)</td>
<td>4.70 (1.19)</td>
</tr>
<tr>
<td>I get all the information I need to do my work</td>
<td>7 (2.4)</td>
<td>20 (6.9)</td>
<td>35 (12.0)</td>
<td>56 (19.2)</td>
<td>99 (34.0)</td>
<td>74 (25.4)</td>
<td>4.52 (1.31)</td>
</tr>
<tr>
<td>I know how my CTE center as a whole is doing</td>
<td>14 (4.8)</td>
<td>19 (6.6)</td>
<td>32 (11.1)</td>
<td>60 (20.8)</td>
<td>100 (34.6)</td>
<td>64 (22.2)</td>
<td>4.40 (1.37)</td>
</tr>
</tbody>
</table>

**Note:** Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6

Within this category, there were two items that had a mean that was greater than the moderately agree (5) level. These statements addressed knowing how to measure individual work (M=5.20, SD=0.93), and using information to make changes that improve individual work (M=5.20, SD=0.94). It is noted that both of these items refer to an individual’s experience with his/her work, versus a work group or the work of an entire center. The remaining three statements in this category had means that exceeded the slightly agree (4) level.

Table 7 illustrates statements that highlight and relate to Workforce Focus. Four items have an emphasis on individual commitment, safety, teamwork, and recognition.
Two additional items address the CTE center leadership team and their support and encouragement of each individual CTE personnel member.

The highest scoring statement in this category had a mean above the moderately agree (5) level. Respondents indicated a great commitment (M=5.71, SD=0.66) to the success of their respective CTE centers. These respondents also indicated that they believed their CTE center was a safe place to work (M=5.42, SD=1.03). The remaining statements also scored above the slightly agree (4) level. The lowest scoring statement in this category (M=4.40, SD=1.50) had to do with being recognized for one’s work.

Table 7

Workforce Focus Criteria Items (n=292)

<table>
<thead>
<tr>
<th>Criteria Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (% )</td>
<td>n (% )</td>
<td>n (% )</td>
<td>n (% )</td>
<td>n (% )</td>
<td>n (% )</td>
<td></td>
</tr>
<tr>
<td>I am committed to my CTE center’s success</td>
<td>1 (0.4)</td>
<td>1 (0.4)</td>
<td>2 (0.7)</td>
<td>10 (3.5)</td>
<td>49 (17.1)</td>
<td>224 (78.1)</td>
<td>5.71 (0.66)</td>
</tr>
<tr>
<td>I have a safe workplace</td>
<td>4 (1.4)</td>
<td>5 (1.7)</td>
<td>11 (3.8)</td>
<td>15 (5.2)</td>
<td>66 (22.7)</td>
<td>190 (65.3)</td>
<td>5.42 (1.03)</td>
</tr>
<tr>
<td>The people I work with work as a team</td>
<td>11 (3.8)</td>
<td>13 (4.5)</td>
<td>14 (4.8)</td>
<td>48 (16.4)</td>
<td>97 (33.2)</td>
<td>109 (37.3)</td>
<td>4.83 (1.31)</td>
</tr>
<tr>
<td>My CTE center’s leadership team and my CTE center care about me</td>
<td>16 (5.5)</td>
<td>25 (8.7)</td>
<td>15 (5.2)</td>
<td>44 (15.2)</td>
<td>78 (27.0)</td>
<td>111 (38.4)</td>
<td>4.65 (1.51)</td>
</tr>
<tr>
<td>My CTE center’s leadership team encourages me to develop my job skills</td>
<td>15 (5.2)</td>
<td>19 (6.6)</td>
<td>26 (9.0)</td>
<td>55 (19.1)</td>
<td>73 (25.4)</td>
<td>100 (34.7)</td>
<td>4.57 (1.47)</td>
</tr>
<tr>
<td>I am recognized for my work</td>
<td>20 (6.9)</td>
<td>17 (5.9)</td>
<td>32 (11.1)</td>
<td>64 (22.2)</td>
<td>71 (24.6)</td>
<td>85 (29.4)</td>
<td>4.40 (1.50)</td>
</tr>
</tbody>
</table>

*Note: Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6*
Table 8 illustrates statements that highlight Operations Focus, including emergency preparedness, resources, and both individual and CTE center process control. The highest scoring item in this category came in at above a moderately agree (5) level (M=5.03, SD=1.18). This item had to do with the overall confidence that the respondents expressed in the ability of their CTE center to handle an emergency. The next highest category had to do with availability of the varying resources (M=4.72, SD=1.26) required to perform the work associated with each individual’s job. It would appear respondents felt that resources were available to support their work. The lowest scoring items in this category had to do with process control, both individual (M=4.69, SD=1.26) and for the CTE center (M=4.54, SD=1.32), although both are still above the slightly agree (4) level. It appears that respondents believed that while there was room for improvement, good operations processes were in place.

Table 8

*Operations Focus Criteria Items*

<table>
<thead>
<tr>
<th>Criteria Items</th>
<th>1 N (%)</th>
<th>2 N (%)</th>
<th>3 N (%)</th>
<th>4 N (%)</th>
<th>5 N (%)</th>
<th>6 N (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My CTE center is prepared to handle an emergency</td>
<td>6 (2.1)</td>
<td>8 (2.8)</td>
<td>14 (4.8)</td>
<td>45 (15.6)</td>
<td>85 (29.4)</td>
<td>131 (45.3)</td>
<td>5.03 (1.18)</td>
</tr>
<tr>
<td>I can get everything I need to do my job</td>
<td>5 (1.7)</td>
<td>19 (6.5)</td>
<td>26 (8.9)</td>
<td>40 (13.7)</td>
<td>114 (39.0)</td>
<td>88 (30.1)</td>
<td>4.72 (1.26)</td>
</tr>
<tr>
<td>I have control over my work processes</td>
<td>6 (2.1)</td>
<td>17 (5.9)</td>
<td>23 (7.9)</td>
<td>56 (19.3)</td>
<td>100 (34.5)</td>
<td>88 (30.3)</td>
<td>4.69 (1.26)</td>
</tr>
<tr>
<td>My CTE center has good processes for doing our work</td>
<td>7 (2.4)</td>
<td>24 (8.4)</td>
<td>26 (9.1)</td>
<td>55 (19.2)</td>
<td>100 (34.8)</td>
<td>75 (26.1)</td>
<td>4.54 (1.32)</td>
</tr>
</tbody>
</table>

*Note:* Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6
Table 9 is the largest category that highlights Results, including statements that again address customer satisfaction, quality of product and the following of laws and regulations, ethical practices, the work environment, community service, personnel, financial viability, and the CTE center’s commitment to continued organizational progress. In its scoring of Baldrige applicants, the organization dedicates the largest

Table 9

<table>
<thead>
<tr>
<th>Criteria Item</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>Item 4</th>
<th>Item 5</th>
<th>Item 6</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My customers are satisfied with my work</td>
<td>1 (0.4)</td>
<td>0 (0.0)</td>
<td>1 (0.4)</td>
<td>22 (7.6)</td>
<td>124 (43.1)</td>
<td>140 (48.6)</td>
<td>5.51 (0.91)</td>
</tr>
<tr>
<td>My CTE center obeys laws and regulations</td>
<td>3 (1.0)</td>
<td>4 (1.4)</td>
<td>4 (1.4)</td>
<td>17 (5.8)</td>
<td>65 (22.3)</td>
<td>198 (68.0)</td>
<td>5.39 (0.69)</td>
</tr>
<tr>
<td>My work products meet all requirements</td>
<td>1 (0.4)</td>
<td>1 (0.4)</td>
<td>3 (1.0)</td>
<td>30 (10.4)</td>
<td>125 (43.4)</td>
<td>128 (44.4)</td>
<td>5.30 (0.77)</td>
</tr>
<tr>
<td>My CTE center practices high standards and ethics</td>
<td>8 (2.8)</td>
<td>9 (3.1)</td>
<td>8 (2.8)</td>
<td>25 (8.7)</td>
<td>74 (25.7)</td>
<td>164 (56.9)</td>
<td>5.22 (1.20)</td>
</tr>
<tr>
<td>My CTE center is a good place to work</td>
<td>6 (2.1)</td>
<td>7 (2.4)</td>
<td>14 (4.9)</td>
<td>32 (11.2)</td>
<td>73 (25.4)</td>
<td>155 (54.0)</td>
<td>5.17 (1.17)</td>
</tr>
<tr>
<td>My CTE center helps me help my community</td>
<td>6 (2.1)</td>
<td>9 (3.1)</td>
<td>20 (6.9)</td>
<td>36 (12.5)</td>
<td>89 (30.9)</td>
<td>128 (44.4)</td>
<td>5.00 (1.21)</td>
</tr>
<tr>
<td>My CTE center has the right people and skills to do the work</td>
<td>9 (3.1)</td>
<td>17 (5.8)</td>
<td>23 (7.9)</td>
<td>43 (14.8)</td>
<td>111 (38.1)</td>
<td>88 (30.2)</td>
<td>4.70 (1.30)</td>
</tr>
<tr>
<td>I know how well my CTE center is doing financially</td>
<td>25 (8.7)</td>
<td>23 (8.0)</td>
<td>42 (14.5)</td>
<td>63 (21.8)</td>
<td>76 (26.3)</td>
<td>60 (20.8)</td>
<td>4.11 (1.53)</td>
</tr>
<tr>
<td>My CTE center removes things that get in the way of progress</td>
<td>22 (7.6)</td>
<td>24 (8.3)</td>
<td>51 (17.7)</td>
<td>61 (21.1)</td>
<td>84 (29.1)</td>
<td>47 (16.3)</td>
<td>4.04 (1.46)</td>
</tr>
</tbody>
</table>

Note: Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6
portion of potential points to results and the use of data as a means for demonstrating quality success (NIST, 2013). It is therefore not surprising that of the seven categories, the Results category has the largest number of statement items.

Of the nine statement items in this category, six scored above a moderately agree (5) level, with customer satisfaction coming in at the highest score (M=5.51, SD=0.91). Respondents also indicated that their individual CTE centers obeyed laws and regulations (M=5.39, SD=0.69), produced quality products (M=5.30, SD=0.77), and conducted their work in an ethical manner (M=5.22, SD=1.20). While work environment as created by CTE center top leaders scored above a slight agree level (M=4.49, SD=1.51) under the Leadership category, it is interesting to note that the mean increased when respondents were asked under the Results category to indicate if their CTE center was a good place to work (M=5.17, SD=1.17). Respondents also indicated that their CTE center supports them in their service to their local community (M=5.00, SD=1.21).

With regard to financial viability of a CTE center, there were similar mean scores found under the category of Measurement, Analysis, and Knowledge Management as well as the Results category. There is a statement within the Measurement, Analysis, and Knowledge Management category which addresses the respondent’s knowledge as to how his/her CTE center, as a whole, is doing (M=4.40, SD=1.37). A statement in the Results category addresses how well each respondent knows how his/her CTE center is doing financially (M=4.11, SD=1.53). While still above the slightly agree level, the lowest scoring statement under results had to do with removing things that get in the way of progress (M=4.04, SD=1.46).
Table 10 illustrates quality awards received by CTE centers, as shared by 52 survey participants. It is noted that best/excellence in practice awards had the greatest frequency (13, 22.0%). The next highest frequency was for green awards (9, 15.3%). It is also of interest that eight participants (13.6%) noted North Central and/or AdvancED Accreditations. One Baldrige applicant is noted among the two (3.4%) ISO 9000 recipients.

Table 10

<table>
<thead>
<tr>
<th>Award</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best/Excellence in Practice Awards</td>
<td>13</td>
<td>22.0</td>
</tr>
<tr>
<td>Green (School) Awards</td>
<td>9</td>
<td>15.3</td>
</tr>
<tr>
<td>North Central and/or AdvancED Accreditation</td>
<td>8</td>
<td>13.6</td>
</tr>
<tr>
<td>State Awards</td>
<td>5</td>
<td>8.5</td>
</tr>
<tr>
<td>Student Organization (CTSO) Awards</td>
<td>3</td>
<td>5.1</td>
</tr>
<tr>
<td>ISO 9000 Awards (includes 1 Baldrige applicant)</td>
<td>2</td>
<td>3.4</td>
</tr>
</tbody>
</table>

With the single, open-ended question in the survey, participants were asked to identify areas of their CTE center in most need of improvement with regard to quality (see Table 11). The highest frequency item addressed both middle and upper level management. Nineteen respondents (19.2%) shared comments which indicated that varying levels of management had not created a climate where employees felt trusted and valued. One respondent shared, “Poor morale. We are losing many excellent staff members due to our principal’s management style.” Another indicated, “The work environment has changed negatively over the past two years as a result of the principal.” One respondent indicated a “complete void of quality leadership at our CTE center.”
Table 11

*Participant Comments on Areas of CTE Needing Improvement with Regard to Quality (Open-Ended Responses; n=99)*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hire upper and/or middle level managers who know CTE and create a</td>
<td>19</td>
<td>19.2</td>
</tr>
<tr>
<td>climate where faculty and staff feel trusted and valued</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need to do a better job of marketing CTE to the public and all vested</td>
<td>17</td>
<td>17.2</td>
</tr>
<tr>
<td>audiences (future students, parents, business and industry, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value, recognize, and recruit qualified teaching personnel who care</td>
<td>13</td>
<td>13.1</td>
</tr>
<tr>
<td>about students (work with Ferris &amp; Western in this effort)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work with home-school counselors to increase student expectations as</td>
<td>8</td>
<td>10.1</td>
</tr>
<tr>
<td>to what CTE is and has to offer, versus a “dumping ground,” and/or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>means to get away from a home school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce paperwork, particularly with regard to TRAC and other state</td>
<td>7</td>
<td>8.08</td>
</tr>
<tr>
<td>requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better communication</td>
<td>6</td>
<td>6.06</td>
</tr>
<tr>
<td>Greater funding and financial support of programs</td>
<td>5</td>
<td>5.05</td>
</tr>
<tr>
<td>CTE center is doing a good job in this regard</td>
<td>4</td>
<td>4.04</td>
</tr>
<tr>
<td>More relevant Professional Development (PD) offerings</td>
<td>3</td>
<td>3.03</td>
</tr>
</tbody>
</table>

*Note:* Some participants shared more than one of the items listed above as equally important.

That individual went on to share that “we need administrators that support the teaching staff, and that can build a quality learning environment from the top down. The educators at our CTE center are not encouraged to take risks.”

Some respondents also shared that members of their CTE center management hierarchy lacked familiarity with CTE. One suggested seeking “administration that has an understanding of CTE.” Another shared, “hire qualified administration with CTE knowledge and experience.”
In this section, 17 CTE center personnel (17.2%) indicated there were many good things going on in CTE centers, but that greater marketing efforts were required to inform the public on happenings and achievements. One respondent wrote that “more proactive media” was needed. This individual went on to share, “We do so many good things, but not many hear about.” Another added, “Increase media and public awareness of the many valuable training opportunities of CTE.” Another indicated that more, “advertising and student awareness” was needed. One comment simply stated, “Market better.” The need for public recognition of student achievement was also noted. It was shared that “media attention of student CTE and other club activities (HOSA State Conference, Skills USA State Conference, BPA, and DECA)” would help with promoting CTE centers and their programming.

Another area of comment (13 respondents, 13.1%) focused on hiring qualified teaching personnel who care about students and suggested that CTE centers work cooperatively with both Western Michigan University and Ferris State University in the entry-level preparedness of these instructors. Concern regarding the perceived image of CTE, and the need to educate home school counselors as to what CTE has to offer, was addressed as a component in several of the comments (eight respondents, 10.1%). One respondent wrote, “Get local school districts to validate the importance of the education that CTE provides to students. I would highly suggest educating local teachers and counselors.” Another added, “Change the focus of some of our home schools. Some of the home schools don’t see us as an asset.”
Additional comments for this open-ended question addressed reducing paperwork and other time-consuming tasks (seven respondents, 8.08%), including TRAC and other state requirements, better communication (six respondents, 6.06%), greater funding and financial support of programs (five respondents, 5.05%), and more relevant Professional Development (PD) offerings (three respondents, 3.03%). Of note were the four respondents (4.04%) who indicated their CTE center was doing a good job with regard to quality. (See Table 11.)

Research Question 2

Research Question 2 examined respondents experience with and desire to pursue quality awards. To address this question, survey questions 8 and 9 asked participants to share if their CTE center has ever considered applying for an external quality award, actually applied for an external quality award, and/or received some external quality award. Those that had received an external quality award were asked to identify the award or awards.

Table 12, which reflects survey question 9, illustrates the experience of CTE personnel with quality awards, and illustrates the offering of yes, no, and do not know question options. Of the 273 respondents, 92 (33.7%) indicated they had considered applying for some external quality award and 26 (9.5%) had not. The largest percentage of respondents, 156 (57.1%) indicated they did not know if their CTE center had ever considered applying for some external quality award. When it came to actually having applied for some external quality award, the numbers were similar. There were 272
Table 12

CTE Personnel Experience with Quality Awards (n=273)

<table>
<thead>
<tr>
<th>Existing Quality Awards</th>
<th>Yes n (%)</th>
<th>No n (%)</th>
<th>Do Not Know n (%)</th>
<th>Total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Considered applying for some external quality award</td>
<td>92 (33.7)</td>
<td>26 (9.5)</td>
<td>156 (57.1)</td>
<td>273</td>
</tr>
<tr>
<td>Actually applied for some external quality award</td>
<td>91 (33.5)</td>
<td>33 (12.1)</td>
<td>151 (55.5)</td>
<td>272</td>
</tr>
<tr>
<td>Actually received some external quality award</td>
<td>81 (28.9)</td>
<td>36 (13.3)</td>
<td>156 (57.6)</td>
<td>271</td>
</tr>
</tbody>
</table>

Note: Not all respondents responded to all items.

respondents, 91 selected yes (33.5%), 33 (12.1%) selected no, and 151 (55.5%) selected do not know.

Of 271 respondents, 81 (28.9%) indicated they had actually received some external quality award and 36 (13.3%) had not. There were 156 (57.6%) respondents who noted that they did not know if their CTE center had actual received some external quality award. Sixty external quality awards were noted. The full list of these awards appears in Appendix E.

Table 13 reflects survey question 10 and illustrates the desire of CTE personnel to apply for an external quality award. As with the Baldrige criteria category items in survey questions 2 through 8, a six-item Likert scale was provided with the same options (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, and strongly agree).
Table 13

**CTE Personnel Desire to Apply for a Quality Award(s) (n=267)**

<table>
<thead>
<tr>
<th>Response Item</th>
<th>1 (n=9)</th>
<th>2 (n=9)</th>
<th>3 (n=21)</th>
<th>4 (n=46)</th>
<th>5 (n=72)</th>
<th>6 (n=110)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe that my CTE center is strong enough to actually win some external quality award(s)</td>
<td>9 (3.4)</td>
<td>9 (3.4)</td>
<td>21 (7.9)</td>
<td>46 (17.2)</td>
<td>72 (27.0)</td>
<td>110 (41.2)</td>
<td>4.85 (1.31)</td>
</tr>
<tr>
<td>Completing this survey has influenced my desire to have my CTE center apply for some external quality award(s)</td>
<td>43 (16.3)</td>
<td>28 (10.6)</td>
<td>54 (20.5)</td>
<td>82 (31.1)</td>
<td>38 (14.4)</td>
<td>19 (7.2)</td>
<td>3.38 (1.47)</td>
</tr>
</tbody>
</table>

*Note: Not all respondents responded to all items. Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6*

When it came to querying each individual respondent as to his/her belief that their CTE center was strong enough to win an external quality award, the greatest number of respondents, 110 of 267 (41.2%) strongly agreed, while 72 (27.0%) moderately agreed, and 46 (17.2%) slightly agreed. Of note, 228 respondents (85.4%) indicated some level of agreement that their CTE center was strong enough to win an external quality award.

In contrast, completing the survey did not appear to have similar influence on each respondent’s desire to apply for some external quality award. The majority (135, 51.6%) of respondents, 82 (31.1%) slightly agreed or 54 (20.5%) slightly disagreed that completing the survey had an influence on their desire to pursue an external quality award. The remaining numbers showed 43 (16.3%) with strong disagreement and 28 (10.6%) with moderate disagreement, while 38 (14.4%) moderately agreed and 19 (7.2%) strongly agreed.
Research question 3 examined if there were any significant differences in item responses between CTE center leaders and their faculty. ANOVA comparisons were run for survey questions 2 through 8, the seven Baldrige criteria items, and for survey question 10, the desire to apply for an external quality award.

Table 14 illustrates significant differences between CTE center leaders and their faculty. Only those categories where significant differences occurred are depicted.

Table 14

| Significant Differences in Item Responses Between CTE Center Leaders and Faculty |
|---------------------------------|----------------|----------------|----------------|
| T Comparison                   | N     | Pr>F   | Post-hoc Tukey Position Differences |
| Leadership                     |       |        |                                |
| (Six collapsed items)          |       |        |                                |
| Leader                         | 33    | 31.27  | 0.0117* Leader and Faculty*     |
| Faculty                        | 184   | 27.72  |                                |
| Paraprofessional Faculty       | 24    | 26.46  | 0.0117* Leader and Faculty*     |
| Strategic Planning             |       |        |                                |
| (Five collapsed items)         |       |        |                                |
| Leader                         | 33    | 25.21  | 0.0005* Leader and Faculty*     |
| Faculty                        | 185   | 21.05  |                                |
| Paraprofessional Faculty       | 24    | 19.29  |                                |
| Workforce Focus                |       |        |                                |
| (Six collapsed items)          |       |        |                                |
| Leader                         | 32    | 31.97  | 0.0328* Leader and Faculty*     |
| Faculty                        | 188   | 29.21  |                                |
| Paraprofessional Faculty       | 23    | 29.17  |                                |
| Results                        |       |        |                                |
| (Nine collapsed items)         |       |        |                                |
| Leader                         | 33    | 47.64  | 0.0286* Leader and Faculty*     |
| Faculty                        | 186   | 44.20  |                                |
| Paraprofessional Faculty       | 24    | 43.33  |                                |

Note: Not all respondents responded to all items. Principal/Assistant Principal, Administrator, and Department Chair & Faculty Member=Leader.

*Difference is significant at p<0.05.

Likert scale used in mean determination: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3, Slightly Agree=4, Moderately Agree=5, Strongly Agree=6
Cronbach’s Alpha testing was conducted on each of the seven Baldrige criteria categories (Table 15), and it was determined that there was a high, inter-correlation between the items for each of the seven categories. Therefore, the data were collapsed to entire categories versus comparison of each item under each of the respective categories.

Table 15

Cronbach’s Alpha Reliability Testing for Baldrige Category Items (n=286)

<table>
<thead>
<tr>
<th>Category</th>
<th>Raw</th>
<th>Standardized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic planning (5 items)</td>
<td>0.928005</td>
<td>0.928402</td>
</tr>
<tr>
<td>Leadership (6 items)</td>
<td>0.910283</td>
<td>0.910885</td>
</tr>
<tr>
<td>Results (9 items)</td>
<td>0.883047</td>
<td>0.889289</td>
</tr>
<tr>
<td>Measurement, analysis, and knowledge management (5 items)</td>
<td>0.861802</td>
<td>0.867062</td>
</tr>
<tr>
<td>Workforce focus (6 items)</td>
<td>0.850249</td>
<td>0.850562</td>
</tr>
<tr>
<td>Operations focus (4 items)</td>
<td>0.846260</td>
<td>0.845111</td>
</tr>
<tr>
<td>Customer focus (5 items)</td>
<td>0.825293</td>
<td>0.843182</td>
</tr>
</tbody>
</table>

Note: Not all respondents responded to all items. Reliability coefficient is .70 or higher.

Statistically significant differences were found with four of the seven Baldrige criteria categories, including Leadership, Strategic Planning, Workforce Focus, and Results. Differences were found between leaders and faculty, and between leaders and paraprofessional faculty. There were no differences found between faculty and paraprofessional faculty. Of additional note is the consistency in mean ranking between CTE center leaders, faculty, and paraprofessional faculty. The mean for CTE leaders was always highest for each of the four categories, followed by faculty and paraprofessional faculty. Leaders represent a combination of Principal/Assistant Principal, Administrator and Department Chair and Faculty Member.
For Leadership, the highest possible Likert selection for each item was 6 (strongly agree), and there were six items under the Leadership category. Therefore, the highest possible total for the Leadership category is 36. The means for the leadership category were as follows: CTE center leader 31.27, CTE center faculty 27.72, and CTE center paraprofessional faculty 26.46. Following the conduction of Post hoc Tukey testing to confirm results, there was a statistically significant difference of 0.0117 (p>0.05) between leaders and faculty, and between leaders and paraprofessional faculty.

Using the same Likert and with five category items, the highest possible total for the Strategic Planning category was 30. The means for that category were as follows: CTE center leader 25.21, CTE center faculty 21.05, and CTE center paraprofessional faculty 19.29. Again, using Tukey confirmation, there was a statistically significant difference of 0.005 (p>0.05) found between leaders and faculty, and between leaders and paraprofessional faculty.

As with Leadership, Workforce Focus had six category items for a highest possible total of 36. The means for Workforce focus were: CTE center leader 31.97, CTE center faculty 29.21, and CTE center paraprofessional faculty 29.17. The Results category had nine items for a highest possible total of 54. The means for Results were: CTE center leader 47.64, CTE center faculty 44.20, and CTE paraprofessional faculty 43.33. For both Workforce Focus and Results, Tukey confirmation testing showed differences between leaders and faculty. For Workforce Focus, the difference of significance was 0.0328 (p>0.05) and for Results 0.0286 (p>0.05); however, no
statistically significant differences were found in these two categories between leaders and paraprofessional faculty.

Table 16 illustrates the differences in desire to pursue an external quality award. Following an ANOVA comparison, no statistically significant differences were found between CTE center leaders, faculty, and/or paraprofessional faculty. With the large number of leaders, faculty, and paraprofessional selecting one of the three levels of agreement with regard to desire to pursue an external quality award, the decision was made to collapse Likert items from 6 to 2, agree or disagree.

Table 16

<table>
<thead>
<tr>
<th>Position</th>
<th>Agree Frequency</th>
<th>%</th>
<th>Disagree Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>31</td>
<td>93.9</td>
<td>2</td>
<td>6.1</td>
</tr>
<tr>
<td>Faculty</td>
<td>159</td>
<td>83.3</td>
<td>32</td>
<td>16.8</td>
</tr>
<tr>
<td>Paraprofessional Faculty</td>
<td>21</td>
<td>87.5</td>
<td>3</td>
<td>12.5</td>
</tr>
</tbody>
</table>

*Note: Strongly Agree, Moderately Agree, and Slightly Agree=Agree, Strongly Disagree, Moderately Disagree, and Slightly Disagree=Disagree.*

Over 80% of respondents in all three categories were in some level of agreement with regard to desire to pursue a quality award. Of the 33 leaders, 31 (93.9%), 191 faculty, 159 (83.3%), and 24 paraprofessional faculty, 21 (87.5%), all were in some level of agreement. Again, there were no statistically significant differences found in the responses between the three groups prior to the collapse of Likert items from 6 to 2. Table 13 previously had illustrated all six items with accompanying responses and findings.
Research question 4 examined the extent to which demographics, including numbers and socioeconomic status (SES) of students, number of students and staff, and location influence CTE center leader and faculty responses. Regression was performed accounting for each variable in determination of statistically significant influence. Table 17 illustrates the findings which indicate that multiple variables did influence responses for five of the seven Baldrige criteria categories. The total number of teaching and administrative staff was the only variable that was found to influence all five categories.

Within Leadership, total teaching and administrative staff showed an f value of 8.00 and a level of significance of 0.0057 (p<0.05), and total students showed an f value of 5.49 and a level of significance of 0.0213 (p<0.05). For Strategic Planning, the f value was 5.65 with a level of significance of 0.0194 (p<0.05).

The Workforce Focus category had three variables which influenced results. They were the area surrounding CTE center (urban/metropolitan, suburban, rural), with an f value of 3.34 and a level of significance of 0.0395 (p<0.05); total teaching and administrative staff, with an f value of 10.24 and a level of significance of 0.0019 (p<0.05); and total students, with an f value of 5.85 and a level of significance of 0.0175 (p<0.05).

There were two variables with demonstrated influence on the Operations Focus category, the geographic Area of Michigan (which was collapsed to North, Southeast, Southwest), with an f value of 4.22 and a level of significance of 0.0175 (p<0.05); and total teaching and administrative staff, with an f value of 4.86 and a level of significance at 0.0298 (p<0.05). For the Results category, only one variable, total teaching and
Table 17

Demographic Influence on Responses

<table>
<thead>
<tr>
<th>Baldrige Category</th>
<th>F Value</th>
<th>Pr&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>8.00</td>
<td>0.0057*</td>
</tr>
<tr>
<td>Total Students</td>
<td>5.49</td>
<td>0.0213</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>2.87</td>
<td>0.0620</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>1.37</td>
<td>0.2583</td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>0.11</td>
<td>0.7437</td>
</tr>
<tr>
<td><strong>Strategic Planning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>5.65</td>
<td>0.0194*</td>
</tr>
<tr>
<td>Total Students</td>
<td>3.48</td>
<td>0.0653</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>2.27</td>
<td>0.1093</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>1.13</td>
<td>0.3261</td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>0.13</td>
<td>0.7215</td>
</tr>
<tr>
<td><strong>Customer Focus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>2.47</td>
<td>0.1191</td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>1.14</td>
<td>0.2878</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>0.86</td>
<td>0.4270</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>0.42</td>
<td>0.6559</td>
</tr>
<tr>
<td>Total Students</td>
<td>0.04</td>
<td>0.8413</td>
</tr>
<tr>
<td><strong>Measurement, Analysis, and Knowledge Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>2.45</td>
<td>0.1207</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>1.69</td>
<td>0.1891</td>
</tr>
<tr>
<td>Total Students</td>
<td>0.81</td>
<td>0.3696</td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>0.52</td>
<td>0.4716</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>0.51</td>
<td>0.6035</td>
</tr>
<tr>
<td><strong>Workforce Focus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>10.24</td>
<td>0.0019*</td>
</tr>
<tr>
<td>Total Students</td>
<td>5.85</td>
<td>0.0175</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>3.34</td>
<td>0.0395*</td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>0.52</td>
<td>0.4714</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>0.32</td>
<td>0.7253</td>
</tr>
<tr>
<td><strong>Operations Focus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>4.86</td>
<td>0.0298*</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>4.22</td>
<td>0.0175*</td>
</tr>
<tr>
<td>Total Students</td>
<td>1.12</td>
<td>0.2935</td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>0.95</td>
<td>0.3326</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>0.77</td>
<td>0.4644</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Teaching and Administrative Staff</td>
<td>5.41</td>
<td>0.0222*</td>
</tr>
<tr>
<td>Total Students</td>
<td>3.90</td>
<td>0.0513</td>
</tr>
<tr>
<td>Geographic Area of Michigan (North, Southeast, Southwest)</td>
<td>1.69</td>
<td>0.1899</td>
</tr>
<tr>
<td>Area Surrounding CTE Center (Urban/Metropolitan, Suburban, Rural)</td>
<td>0.97</td>
<td>0.3827</td>
</tr>
<tr>
<td>Student SEC (Lower/Lower-Middle, Middle/Upper-Middle)</td>
<td>0.03</td>
<td>0.8627</td>
</tr>
</tbody>
</table>

*Level of significance is p<0.05
administrative staff, influenced results. The f value for that variable was 5.41 and the level of significance was 0.0222 (p<0.05).

**Chapter IV Summary**

Chapter IV provided a detailed analysis of the results obtained through my electronic survey. Frequencies, descriptive statistics, ANOVA comparisons, and regression testing were all employed to address the four research questions. An open-ended question was analyzed and common themes were presented to support findings. Chapter V will describe how these results relate to the literature and will also offer recommendations for CTE centers with questions regarding external quality award criteria and/or desire to pursue such an award.
CHAPTER V

DISCUSSION AND RECOMMENDATIONS

This chapter examines the results from an online survey instrument titled, *CTE Quality Initiatives*, which was completed by 386 CTE center leaders and faculty members in Michigan. The intent of this study was twofold. First, the study sought to measure the extent to which CTE centers are aligned with the Baldrige Criteria Categories. As illustrated on the conceptual framework in Chapter I, many CTE centers may be aligned with the Baldrige Criteria Categories based on their accreditation through AdvancED. In addition to this, the Malcolm Baldrige Quality Award originated in business, and CTE centers have established working relationships with local business communities. Second, this study sought to examine which, if any, quality awards have been received by CTE centers, and to further examine the desire on the part of CTE center leaders and their faculty to pursue external quality awards.

As shared in Chapter II, much of the research regarding the Baldrige Award in Education has been conducted in the postsecondary setting. While some research exists on the Baldrige Award and its application in the secondary education setting, research specific to CTE centers’ pursuit of the Baldrige Award is virtually non-existent. This study began the examination of potential alignment of CTE centers with Baldrige Award Criteria Categories, and also a desire for pursuit of the Baldrige Award in Education by these centers.
Summary of Major Results

The findings presented in this study represent the voices of 386 CTE center leaders and faculty members in Michigan. These participants represented centers with less than nine faculty members to those that had over 100 faculty members, symbolizing 15 of the 16 career cluster areas. These CTE centers represented all geographic areas of Michigan (including the Upper Peninsula), and were found in urban, suburban, and metropolitan settings. Student populations for these centers ranged from less than 100 students to well over 3,000. The majority of these students are perceived to come from lower-middle class and middle class backgrounds.

Findings Related to Extent of Alignment with the Baldrige Award Criteria Categories

My survey asked CTE center leaders and faculty to examine the extent to which they believe their organizations are aligned with the seven Baldrige Award Criteria Categories. Data gathered through this process identifies that these participants did believe their CTE centers aligned with multiple criteria category items. Of the 40 Baldrige item options found under the seven Baldrige Criteria Categories, only four items had less than 50% of participants (one of the four came in at 49.8%) who did not indicate moderate and/or strong agreement with each of the items. Fourteen of the 40 items actually had 75% or more of participants in moderate and/or strong agreement (one additional item came in at 74.4%). Six of these 14 items were found in the Results category (see Table 18).
## Table 18

### Mean Ranking of Baldrige Category Items (n=292)

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>(W)</td>
<td>I am committed to MY CTE center’s success</td>
<td>5.71</td>
<td>0.66</td>
</tr>
<tr>
<td>(C)</td>
<td>I know who my most important customers are</td>
<td>5.57</td>
<td>0.74</td>
</tr>
<tr>
<td>(R)</td>
<td>My CTE center obeys laws and regulations</td>
<td>5.51</td>
<td>0.91</td>
</tr>
<tr>
<td>(W)</td>
<td>I have a safe workplace</td>
<td>5.42</td>
<td>1.03</td>
</tr>
<tr>
<td>(R)</td>
<td>My customers are satisfied with my work</td>
<td>5.39</td>
<td>0.69</td>
</tr>
<tr>
<td>(R)</td>
<td>My work products meet all requirements</td>
<td>5.30</td>
<td>0.77</td>
</tr>
<tr>
<td>(R)</td>
<td>My CTE center practices high standards and ethics</td>
<td>5.22</td>
<td>1.20</td>
</tr>
<tr>
<td>(L)</td>
<td>I know my CTE center’s mission</td>
<td>5.22</td>
<td>1.17</td>
</tr>
<tr>
<td>(C)</td>
<td>I regularly ask my customers what they need and want</td>
<td>5.21</td>
<td>0.90</td>
</tr>
<tr>
<td>(M)</td>
<td>I can use this information to make changes that will improve my work</td>
<td>5.20</td>
<td>0.94</td>
</tr>
<tr>
<td>(M)</td>
<td>I know how to measure the quality of my work</td>
<td>5.20</td>
<td>0.93</td>
</tr>
<tr>
<td>(C)</td>
<td>I also know who my CTE center’s most important customers are</td>
<td>5.18</td>
<td>1.10</td>
</tr>
<tr>
<td>(R)</td>
<td>My CTE center is a good place to work</td>
<td>5.17</td>
<td>1.17</td>
</tr>
<tr>
<td>(O)</td>
<td>My CTE center is prepared to handle an emergency</td>
<td>5.03</td>
<td>1.18</td>
</tr>
<tr>
<td>(R)</td>
<td>My CTE center helps me help my community</td>
<td>5.00</td>
<td>1.21</td>
</tr>
<tr>
<td>(C)</td>
<td>I ask if my customers are satisfied or dissatisfied with my work</td>
<td>4.98</td>
<td>1.00</td>
</tr>
<tr>
<td>(L)</td>
<td>I know my CTE center’s vision</td>
<td>4.88</td>
<td>1.30</td>
</tr>
<tr>
<td>(C)</td>
<td>I am allowed to make decisions to solve problems for my customers</td>
<td>4.84</td>
<td>1.24</td>
</tr>
<tr>
<td>(W)</td>
<td>The people I work with cooperate and work as a team</td>
<td>4.83</td>
<td>1.31</td>
</tr>
<tr>
<td>(O)</td>
<td>I can everything I need to do my job</td>
<td>4.72</td>
<td>1.26</td>
</tr>
<tr>
<td>(R)</td>
<td>My CTE center has the right people and skills to do its work</td>
<td>4.70</td>
<td>1.30</td>
</tr>
<tr>
<td>(M)</td>
<td>I know how the measures I use in my work fit into my CTE center’s overall measures of improvement</td>
<td>4.70</td>
<td>1.19</td>
</tr>
<tr>
<td>(O)</td>
<td>I have control over my work processes</td>
<td>4.69</td>
<td>1.26</td>
</tr>
<tr>
<td>(W)</td>
<td>My CTE center’s leadership team and my CTE center care about me</td>
<td>4.65</td>
<td>1.51</td>
</tr>
<tr>
<td>(L)</td>
<td>Senior (top) leaders at my CTE center use our organization’s values to guide us</td>
<td>4.65</td>
<td>1.40</td>
</tr>
<tr>
<td>(L)</td>
<td>My CTE center’s leadership team shares information about the organization</td>
<td>4.61</td>
<td>1.41</td>
</tr>
<tr>
<td>(W)</td>
<td>My CTE center leadership team encourages me to develop my job skills so I can advance in my career</td>
<td>4.57</td>
<td>1.47</td>
</tr>
<tr>
<td>(S)</td>
<td>My CTE center encourages totally new ideas (innovation)</td>
<td>4.54</td>
<td>1.50</td>
</tr>
<tr>
<td>(O)</td>
<td>My CTE center has good processes for doing our work</td>
<td>4.54</td>
<td>1.32</td>
</tr>
<tr>
<td>(M)</td>
<td>I get all the information I need to do my work</td>
<td>4.52</td>
<td>1.31</td>
</tr>
<tr>
<td>(L)</td>
<td>Senior (top) leaders at my CTE center create work environment that helps us do our job</td>
<td>4.49</td>
<td>1.51</td>
</tr>
<tr>
<td>(S)</td>
<td>I know the parts of my CTE center’s plans that will affect me and my work</td>
<td>4.44</td>
<td>1.40</td>
</tr>
<tr>
<td>(W)</td>
<td>I am recognized for my work</td>
<td>4.40</td>
<td>1.50</td>
</tr>
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Table 18—Continued

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td></td>
<td>I know how my CTE center as a whole is doing</td>
<td>4.40</td>
<td>1.37</td>
</tr>
<tr>
<td>(L)</td>
<td>My CTE center’s leadership team asks what I think</td>
<td>4.27</td>
<td>1.58</td>
</tr>
<tr>
<td>(S)</td>
<td>My CTE center is flexible and can make changes quickly when needed</td>
<td>4.21</td>
<td>1.49</td>
</tr>
<tr>
<td>(S)</td>
<td>As it plans for the future, my CTE center asks for my ideas</td>
<td>4.19</td>
<td>1.59</td>
</tr>
<tr>
<td>(R)</td>
<td>I know how well my CTE center is doing financially</td>
<td>4.11</td>
<td>1.53</td>
</tr>
<tr>
<td>(S)</td>
<td>I know how to tell if my CTE center is making progress on my work group’s part of the plan</td>
<td>4.08</td>
<td>1.46</td>
</tr>
<tr>
<td>(R)</td>
<td>My CTE center removes things that get in the way of progress</td>
<td>4.04</td>
<td>1.46</td>
</tr>
</tbody>
</table>

*Note: Likert scale: Strongly Disagree=1, Moderately Disagree=2, Slightly Disagree=3; Slightly Agree=4, Moderately Agree=5, Strongly Agree=6.*

Baldrige Codes: W=Workforce Focus, C=Customer Focus; R=Results, L=Leadership, M=Measurement, Analysis, and Knowledge Management; O=Operations Focus; S=Strategic Planning

Highest ranking items in each of the seven categories included: (a) knowledge of the CTE centers mission and vision under Leadership; (b) encouragement of innovation and knowing the parts of a CTE center’s plan that affect individual work under Strategic Planning; (c) knowing most important customers and what they need and want under Customer Focus; (d) knowing how to measure individual work quality and using information to make changes that improve individual work under Measurement, Analysis, and Knowledge Management; (e) being committed to the CTE center’s success, which was the highest scoring of the forty items, and having a safe workplace under Workforce Focus; (f) preparedness to handle emergencies and availability of resources under Operations Focus; and (g) customer satisfaction and following regulatory requirements under Results.

These findings reinforce support for application to the Baldrige or other external quality awards as a framework for identifying and validating best practices. As shared in the literature review, Sampaio et al. (2012) note that “excellence models provide personal
involvement opportunities in leadership, a structured holistic approach to organization improvement, benchmarking opportunities, and access to best practices” (p. 196). They indicate that a quality award allows managers to understand and align objectives, strategies, and support approaches with teams and goals. Work by Hendricks and Singhal (2001) indicated strong evidence that organizations winning quality awards outperform non-awarded organizations on operating, income-based measures.

Of additional note in the literature, is the study by Samson and Terziovski (1999) which showed a significant, cross-sectional relationship between best practices and performance. With their study, the categories of leadership and customer focus were the strongest indicators of operational performance. In lieu of that, it’s interesting to note that in my study the top ranking items for the Leadership category were knowledge of CTE center mission (M=5.22, SD=1.17) and vision (M=4.88, SD=1.30). This would appear to reinforce Collins’ (2001) leadership philosophy shared in Good to Great that “all members of a team need to be on the same bus” (p. 41). Mission and vision are the beginnings for all to get onboard. With commitment to CTE center success as the highest scoring of the 40 items (M=5.71, SD=0.66), it appears, at onset, that leaders and faculty have all expressed investment in the journey ahead.

In addition, Collin’s theory of “getting everyone on the bus” also appears to address the two lowest scoring items for the Leadership category, those being an environment that fosters productive work (M=4.49, SD=1.51) and where CTE center leadership team members solicit employee input (M=4.27, SD=1.58). Perhaps these two items illustrate where Collins’ leadership philosophy may provide additional assistance to
centers. It begs the question, once all are on the bus with destination determined, how do we create an inclusive atmosphere for all which leads to successful journey?

For the Customer Focus category, the two highest scoring items were knowledge of most important customers (M=5.57, SD=0.74) and knowing what customers need and want (M=5.21, SD=0.90). This would appear to reinforce that customer satisfaction is at the heart of quality-identified, award-winning organizations. The two lowest scoring items for this category were asking customers if they are satisfied with the work product (M=4.98, SD=1.00) and allowing employees to make decisions that solve problems for customers (M=4.84, SD=1.24). A review of the literature would indicate the importance of all four of these items and serves as incentive for customer feedback and empowerment of personnel.

**Findings Related to Experience with and Desire to Pursue Quality Awards**

My data indicate that while 33.7% (n=92) of CTE center leaders and faculty have experience with applying for some quality award, 57.1% (n=156) are unsure in this regard. This is contrasted to the desire of many (n=110) who were in strong agreement that their CTE center was strong enough to actually win some external quality award (M=4.85, SD=1.31). Perhaps this is due, in part, to some of the current demands placed upon educational administrators and faculty as shared in the literature by Arif and Smiley (2003), including: declining enrollments, declining quality, facilitating change, changing demographics, advancing technology, competition among institutions, employers demanding better graduates, student satisfaction with overall service quality, and the costs associated with educational delivery. It would appear each of these things, with their challenges, would demonstrate the value to be added in a cooperative effort of
working toward a preventive, quality structure; however, each takes their toll on any
given individual and command time from already busy schedules.

Ultimately building upon an established quality structure and moving toward
application for a quality award would appear to have even greater benefit. In his book,
The Seven Habits of Highly Effective People: Powerful Lessons in Personal Change,
Covey (2001) speaks to the importance of thinking win/win, seeking to understand and be
understood, and synergizing teams. Perhaps in a synergistic, all-engaged pursuit of a
quality award, there are powerful gains that go beyond establishment of organizational
infrastructure. Certainly, completion of the survey instrument as an isolated experience
did not appear to encourage CTE center leaders and their faculty to pursue an external
quality award (M=3.38, SD=1.47).

Findings Related to Difference in Responses between CTE Center Leaders and
Faculty

Data revealed differences in the data between CTE center leaders and their faculty
in four of the seven Baldrige Criteria Categories. As categories were collapsed and
ANOVA testing conducted, differences were discovered within the Leadership, Strategic
Planning, Workforce Focus, and Results categories. Means for each category consistently
showed leaders being more positive, with faculty and paraprofessional faculty following
respectively.

For the Leadership and Strategic Planning categories, differences occurred
between CTE center leaders and faculty, and between CTE center leaders and
paraprofessional faculty. For Workforce Focus and Results, differences existed between
leaders and faculty. There were no statistically significant differences found between
faculty and paraprofessional faculty.

Consideration of differences, where found, between leaders and faculty and
leaders and paraprofessional faculty potentially gives voice to concern regarding shared
vision. As Senge (1990) shared, “Few, if any, forces in human affairs are as powerful as
shared vision. They create a sense of commonality that permeates the organization and
gives coherence to diverse activities” (p. 206). With differences occurring between
administration and varying faculty members, it raises the question of an “us versus them”
organizational mentality. In addressing shared vision, Senge goes on to say that, “A
vision is truly shared when you and I have a similar picture and are committed to one
another having it, not just to each of us, individually having it. When people truly share a
vision, they are connected, bound together by a common aspiration” (p. 206). This also
speaks to the suggestion regarding the need for greater communication found in the
quality comments table for the open-ended survey question. Shared vision typically
begins with communication.

**Findings Related to the Extent to Which Demographics Influence Responses**

Demographic influences were found when holding constant the total number of
administrators, faculty, and staff, and also when holding for total number of students (see
Table 19). While influences were both positive and negative, it is important to remember
the overall positivity in the data found prior to and within this table, that being a large
number of perceptions of positive outcomes. This includes the perceptions of alignment
with the Baldrige criteria and strength to win and/or desire to apply for an external
quality award. It also includes the fact that leaders were most positive with respect to
their perceptions of alignment with the Baldrige criteria. Deming (TQM, n.d.) indicates that TQM begins with leadership, and that quality initiatives need to come from the top down.

Table 19

Demographic Influences on Baldrige Categories

<table>
<thead>
<tr>
<th>Demographic Group or Category</th>
<th>Leadership</th>
<th>Strategic Planning</th>
<th>Customer Focus</th>
<th>Measurement, Analysis, &amp; Knowledge Management</th>
<th>Workforce Focus</th>
<th>Operations Focus</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTE Personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader</td>
<td>P</td>
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<td>N</td>
<td>N</td>
<td>P</td>
<td>P</td>
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</tr>
<tr>
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<td>P</td>
<td>N</td>
<td>N</td>
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<tr>
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<td>P</td>
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<td>P</td>
<td>P</td>
<td>P</td>
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<tr>
<td>Area of Michigan</td>
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<td></td>
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</tr>
<tr>
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<td>N</td>
<td>N</td>
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<td>N</td>
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</tr>
<tr>
<td>Suburban</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Urban</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>North Michigan (with U.P.)</td>
<td>N</td>
<td>N</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
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<td>P</td>
<td>N</td>
<td>P</td>
</tr>
<tr>
<td>Southwest Michigan</td>
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<tr>
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<tr>
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<tr>
<td>Middle/Upper-Middle</td>
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<td>P</td>
<td>P</td>
<td>N</td>
<td>N</td>
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</table>

When Holding Constant the Numbers of Administrators, Faculty, and Staff

<table>
<thead>
<tr>
<th>Demographic Group or Category</th>
<th>Leadership</th>
<th>Strategic Planning</th>
<th>Customer Focus</th>
<th>Measurement, Analysis, &amp; Knowledge Management</th>
<th>Workforce Focus</th>
<th>Operations Focus</th>
<th>Results</th>
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<tbody>
<tr>
<td>CTE Personnel</td>
<td></td>
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</tr>
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<td>Leader</td>
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<td>P</td>
<td>N</td>
<td>N</td>
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<tr>
<td>Faculty Member</td>
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<td>P</td>
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<td>P</td>
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<tr>
<td>Paraprofessional</td>
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<td>P</td>
<td>P</td>
<td>P</td>
<td>N</td>
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<td>Area of Michigan</td>
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<tr>
<td>Rural</td>
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<td>N</td>
<td>N</td>
<td>N</td>
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<td>N</td>
</tr>
<tr>
<td>Suburban</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Urban</td>
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<td>P</td>
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<td>P</td>
<td>P</td>
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<tr>
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</tr>
<tr>
<td>North Michigan (with U.P.)</td>
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<td>P</td>
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<td>N</td>
<td>N</td>
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<td>Southeast Michigan</td>
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<td>P</td>
<td>P</td>
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<td>P</td>
</tr>
<tr>
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<tr>
<td>Socioeconomic Status of Students</td>
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<tr>
<td>Lower/Lower-Middle</td>
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<td>N</td>
<td>N</td>
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<td>Middle/Upper-Middle</td>
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<td>P</td>
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<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

Note: P=more positive responses and N=more negative responses.
In holding constant the total number of administrators, faculty, and staff, faculty were more negative, with their responses having negative influence in five of the seven Baldrige categories. Leaders were next with responses being more negative in four of seven categories. Paraprofessionals were the most positive with their responses being more positive in five of seven categories. Strategic Planning was the only category where all three groups had negative responses.

With regard to other demographic influences, CTE center leaders and faculty who identified themselves as being surrounded by an urban area were most positive, with more positive responses to items in all categories when holding for total number of administrators, faculty, and staff. When holding constant the total number students, this same group remained positive with more positive responses in all but one category. CTE center leaders and faculty who identified the area surrounding their CTE center as rural, were more negative in all seven categories in holding constant both the total numbers of administrators, faculty, and staff, and also the total number of students. There were mixed results with suburban CTE center leaders and faculty. This group was more negative in six of seven categories, when holding constant the total numbers of administrators, faculty, and staff, but positive when holding constant the total number of students. In holding constant the total number of students, suburban CTE leaders and faculty were more positive in their responses in all seven categories. It is of note that when holding constant the total number of administrators, faculty, and staff, both rural and suburban had a common, more negative response to strategic planning category items.
For geographic area of Michigan (North, Southwest, and Southeast), CTE center leaders and faculty who identified themselves as being from Southeast Michigan were more positive in their responses. When holding constant the total number of administrators, faculty, and staff, they were more positive in five of seven categories. When holding constant the total number of students, they were more positive in six of seven categories. For North Michigan and Southwest Michigan, leaders and faculty were more negative when holding for both total numbers of administrators, faculty, and staff and total number of students. Respondents from North Michigan, were more negative in six of seven categories when holding constant both variables, and those from Southwest Michigan were more negative in all seven categories, when holding constant the total number of administrators, faculty, and staff. They were also more negative, six of seven categories, when holding constant the total number of students.

Primary socioeconomic status of students, as identified by participants, appeared to have significant influence. For those CTE center leaders and faculty whose students were primarily identified as lower and/or lower-middle class, participants were more negative in all categories when holding constant both variables. In contrast, CTE center leaders and faculty whose students were primarily identified as middle and/or upper-middle class, were positive in all categories when holding constant the total number of students, and more negative, four of seven categories, when holding constant the total number of administrators, faculty, and staff.

Again, in holding constant the total number of administrators, faculty, and staff, faculty were more negative, with their responses having negative influence in five of the seven Baldrige categories. This may suggest that teacher-to-student ratios, the subject of
many research studies, should be further probed with specific respect to CTE centers. In one study by Atta et al. (2011), small class size led to high academic achievement. The authors went on to share that small class sizes allow for all students to participate in each and every class activity. Funding and financial considerations obviously play into the difficulty of maintaining smaller class sizes. Concerns regarding inadequate and/or decreased funding were among those expressed on the quality comments table for the open-ended survey question.

**Implications for Future Research**

Research on quality award application for CTE centers is virtually non-existent. Previous studies have focused on business-related excellence models and relationships between practice and performance. Some research does exist at the postsecondary level, with studies from DePaul and Rutgers Universities, which demonstrated the positive effect of knowledge of Baldrige and its related quality criteria on both employee and student work performance (Belohlav et al., 2004; Lehr & Ruben, 1999). The ACT Policy Report of 2002 indicated that there have been studies at the K-12 level, with districts of varying demographics, to determine the effectiveness of adaptation of the Baldrige Criteria. One study by Horine, Frazier, and Edmister (1998) demonstrated that embracing Baldrige criteria elements did increase student performance, including test scores for students. However, in another study by Detert et al. (2000), it was noted that when all participants were not fully vested in the process, data regarding performance were inconclusive.

As educational institutions become increasingly pressed to do more with less and to validate student performance success, quality infrastructures will likely become
increasingly in demand. This is further suggested by the competition for students seen at all educational levels. The business community and competitive nature of the global marketplace would also appear to command it.

My study has helped develop a basic understanding of the alignment of Michigan CTE centers with the Baldrige criteria, and the desire by personnel in these centers to pursue external quality awards. A qualitative study, in follow-up to the themes which appeared in the open-ended question, could provide greater insight into the data collected for this study. For example, why was there considerable moderate and/or strong agreement with items under the Leadership category, yet 19 quality comments on the open-ended question (the highest appearing comment at 19.2%) indicated that some form of new leadership was in order? Further investigation could also yield further specifics as to what is lacking in the area of communication, another item of concern on the open-ended question (six respondents, 6.06%). It may also be interesting to query additional CTE personnel (counselors, support staff, etc.) to see if their perspectives were similar to those expressed by CTE center leaders and faculty.

In an effort toward continuation and consistency, researching local community colleges, which typically teach skills-oriented curriculums and frequently have articulation agreements with CTE centers, may also prove of benefit with respect to potential alignment with the Baldrige Criteria Categories and with desire to pursue external quality award(s). Additional research with students at both CTE centers and in local community college occupational programs could provide additional insight from a customer vantage perspective.
The intent of my study was to examine the extent to which CTE center leaders and their faculty believe their organizations are aligned with the Baldrige Criteria Categories and the subsequent experience with and/or desire to pursue some external quality award. This study was performed in one state. While federal funding of CTE programs provides some commonality with regard to monetary requirements, each state also has its own respective funding policies and procedures.

As noted in implications for future research, additional CTE personnel, students, and community college personnel working with vocational programs were not included as a part of this study. The goal of my study was to narrow the focus and begin the conversation.

While the response rate for my study was good (28.5%), it is noted that for all questions, and for whatever reason, many participants did not elect to respond to some items. Part of this may be a result of the consortium structure of some CTE centers in Michigan as shared in Chapter III limitations. It would have been advisable to provide greater clarity in this regard, for that specific audience, as a part of the survey instructions.

Implications for Policy, Practice, and Organization

The findings gained from this study can assist CTE center leaders, faculty, and paraprofessional faculty, and CTE center programs. It was evident from this study that at least some CTE center leaders and faculty believe that their organizations may be aligned with the Baldrige Category Criteria, and also believe that their individual CTE centers are strong enough to win an external quality award. When comparisons were run,
differences in responses were seen between leaders and faculty, and leaders and paraprofessional faculty. To address this, leaders, faculty, and paraprofessional faculty need to get “on the bus” as shared by Collins (2001). When groups of individuals become suspect of one another and/or unsure of motive, they may be working at cross-purposes. Data also indicated that demographics, specifically the total number of teaching and administrative staff, influence responses. With this, and in recognition of cutbacks in state funding which occurred in 2011, all CTE center personnel need to take an objective, discerning look at where monies are being spent and how best to utilize current, available resources.

Data reveal that items with respect to the Strategic Planning category are those that currently require greatest attention. None of the items had a mean over four, and all five appear in the bottom third of ranking, with the highest ranking item being CTE encouragement of totally new ideas, innovation (M=4.54, SD=1.50). Lower ranking items included: knowing the parts of the CTE center’s plans that will affect individuals and their work (M=4.44, SD=1.40), CTE center flexibility and ability to make changes quickly when needed (M=4.21, 1.49), asking CTE personnel for their ideas (M=4.19, SD 1.59), and knowing how to tell if a CTE center is making progress on an individual work group’s part of the plan (M=4.08, SD=1.46). This was the second-lowest rated of all 40 items. The lowest-ranking came from Results. It addressed CTE centers removing things getting in the way of progress (M=4.04, SD=1.46).

In the sections that follow, I offer a series of recommendations, as derived from my data and from the literature review. These recommendations, as well as key data, are summarized in Table 20.
Table 20

Recommendations

<table>
<thead>
<tr>
<th>Lower Scoring Items by Category (M&lt;4.50)</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. First and foremost, celebrate the large number of perceptions of positive outcomes with regard to alignment with the Baldrige criteria and ability to win and/or desire to pursue external quality award.</td>
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</tbody>
</table>

Leadership**

My CTE center’s top leaders create a work environment that helps us do our job (M=4.49, SD=1.51)

2. Assessment and climate survey of individual CTE center personnel to further distinguish concerns as systems-managerial, physical and/or cultural. Once primary concerns are distinguished, implement the next recommendation.

3. Focus groups or listening sessions to provide a forum for employees to explain what they think, and empower employees by involving them in processes specifically designed to improve relationships with management (Fox, 2014).

4. Physical, genuine presence of support by management, versus corner-office management.

My CTE center’s leadership team asks what I think (M=4.27, SD=1.58)

5. Suggestion/Comment box, as well as brown bag lunches, and/or anonymous online mailboxes

Strategic Planning**

I know the parts of my CTE center’s plans that will affect my work (M=4.44, SD=1.40)

6. Development of an organizational chart; Development and sharing of CTE center Strategic Plan and sharing of subsequent progress with regard to the plan.

7. Apply for an external quality award (Baldrige Application provides for post-review physical documentation which can be used for Strategic Planning purposes).

My CTE center is flexible and can make changes quickly (M=4.21, SD=1.49)

8. Establish protocol to address problems, as previously outlined in Shared Vision and Getting on the Bus.

My CTE center asks for my ideas as it plans for the future (M=4.19, SD=1.59)

9. Empower personnel to solve problems with administrator support, & create departmental problem solving teams, to include administration, to jointly brainstorm and propose solution(s).

I know how to tell if my CTE center is making progress on my work group’s part of the plan (M=4.08, SD=1.46)

10. Administration would need to make concentrated effort to make clear how programs and policies relate to the CTE center mission, and how day-to-day work is part and parcel of accomplishing goals (Fox, 2014).
Table 20—Continued

<table>
<thead>
<tr>
<th>Lower Scoring Items by Category (M&lt;4.50)</th>
<th>Recommendation</th>
</tr>
</thead>
</table>

**Customer Focus**

No Items scored below M<4.50; however, attention to customer satisfaction is always essential.

11. Continue to build on current process of annual student evaluations, surveys to local community colleges, and surveys to the local business community. Provide ample area for suggestions on future improvements for customer-driven initiatives.

**Measurement, Analysis, and Knowledge Management**

I know how my CTE center as a whole is doing (M=4.40, SD=1.37)

12. Bi-annual sharing of Balance Sheet and other applicable financial statements

Development and sharing of CTE center Strategic Plan and sharing of subsequent progress with regard to the plan (previous recommendation #5)

**Workforce Focus**

I am recognized for my work (M=4.40, SD=1.50)

13. Development of CTE center awards for instructional and other excellence, including, but not limited to, years of service

**Operations Focus**

No Items Scored Below M=4.50

**Results**

I know how well my CTE center is doing financially (M=4.11, SD=1.53)

Development and sharing of CTE center Strategic Plan and sharing of subsequent progress with regard to the plan (previous recommendation #5)

My CTE center removes things that get in the way of progress (M=4.04, SD=1.46)

Establishment of Protocol to address problems, as previously outlined in Shared Vision and Getting on the Bus (previous recommendation #7)

Bi-annual sharing of Balance Sheet and other applicable financial statements (previous recommendation #11)

*Note: **Statistically significant difference p<0.05 between leaders and faculty and leaders and paraprofessional faculty; *Statistically significant difference p<0.05 between leaders and faculty.
Leadership

First, climate surveys of CTE center personnel, to further distinguish concerns as physical and/or cultural, are recommended. Once primary concerns are identified and designated, implementation of the next recommendation would be suggested.

Second, better communication is needed, not only to address any tensions between leaders and faculty, but also to allow for a more productive work environment where all feel comfortable with the sharing of ideas and/or concerns. This could be accomplished through focus groups and listening sessions, which would provide a forum for employees to explain what they think. It also affords opportunity to empower employees by involving them in processes specifically designed to improve relationships with management (Fox, 2014).

A third recommendation is a visible leadership presence, witnessed regularly by all departments throughout the CTE center. This physical action would signify a concentrated effort on the part of leadership to demonstrate genuine support of programs, faculty, and students.

Fourth, suggestion/comment boxes could prove opportunity for employees to offer input on concerns and/or suggestions for making things better. Brown bag lunches, and/or anonymous online mailboxes may also be initiated for this purpose.

Strategic Planning

As a fifth overall recommendation, CTE centers would be assisted by the development of organizational charts that would not only illustrate hierarchy, but also the interdependence (systems thinking) of accountability between personnel and
departments. This would further be supported by the development of an organizational strategic plan.

A sixth recommendation, following completion of the organizational chart, would be for CTE centers to apply for an external quality award. Baldrige applicants receive a post-review written report that supplies many of the pieces for creation of a strategic plan. Many applicants apply for the award knowing that they will not win, but rather for the specific purpose of receiving the post-review written report (NIST, 2013).

Seventh, the data would suggest that there are many cultural paradigms (many effective, some not) within CTE centers. Taking the time to begin the dialogue of how to address problems when they arise, without threat of intimidation or retribution (which was a noted suggestion in response to the open-ended question), would appear the first step in working to raise rankings for the items noted above. Recognition of commonly-identified problems and chartered courses for solving them could set precedent for future behavior. Initial steps could begin with small-scale success on a commonly-identified problem and accompanying potential (goal) solution.

Once that first goal is achieved, reflection on everyone’s part regarding how the goal affected each individual’s work, and how individuals were able to assess individual and group progress and make changes as needed, would provide future model. Most importantly with all of this, would be the investment by all in changing the paradigm. It would be essential that everyone’s contributions would be welcome and valued, with caution for allowance of any single individual and/or group to dominate or control the dialogue and/or decision-making. This takes work, and everyone would need to understand that bumps in the road, while expected, should not keep the bus off course.
As expressed in multiple responses to the open-ended question for suggestion and above, the need for communication would be essential. Face-to-face time and active listening would need to be part of the goal-achievement process.

Eighth, by creating a productive work environment, querying employees as to what they think and for their ideas, and providing macro understanding of the big picture, leaders would be encouraged to facilitate activities as noted in Leadership above. In addition, leaders could provide suggestion as to how to assess individual and group progress. Empowering personnel with the leverage to solve problems with the assurance of administrator support, and with the creation of departmental problem-solving teams, a level of mutual trust is created. These departmental problem-solving teams would include administration and could brainstorm and propose solution(s) to larger problems.

A ninth recommendation would be for administration to provide clarity for faculty and other personnel as to how programs and policies relate to the CTE center’s mission. This would include clarification and explanation as to how day-to-day work is part and parcel of a larger systems-thinking process in achieving goals.

**Customer Focus**

Tenth, and although not identified as a lower-ranking item but based on knowledge gained via the literature review, is the recommendation for continued attention to, and enhancement of, customer focus as an essential piece of a larger systems-thinking process, which has the customer at its center. This continued attention would include continued annual survey of students and local community college and business personnel, providing ample area for suggestion and feedback.
Measurement, Analysis, and Knowledge Management

Eleventh, as data indicated that knowledge of how their CTE center was doing, both as a whole and financially, was a lower-ranking item, a bi-annual sharing of balance sheets and other applicable financial statements is recommended. Informing staff of budgetary expenditures and other financial considerations is an empowering gesture.

Workforce Focus

Lastly, as a twelfth recommendation, both as a lower-ranking item and in the open-ended question comments, CTE center leaders and faculty indicated that they would like to be recognized for their work. While straight-forward expressions of gratitude, either verbally or in writing, are always appreciated, it is recommended that CTE centers develop awards of recognition. These awards may be for instructional excellence, years of service, community service, etc.

Table 20 provided an overall summary of all the recommendations developed from my study.

Closing Thoughts

While quality may have different meanings to individuals, organizations, or associations, most, if not all, are in agreement that high-level performance is attention-drawing. Whether it is in academics, the business world, sports, or contributions to the greater good individuals, groups, and teams who have performed to high levels have frequently received recognition for their accomplishment. They set the standard for best practice. CTE centers have an established bar set for quality practice via their accreditation requirements. They attempt to offer relevancy and applicability in their programming, as well as real-world experiences within local business communities.
As part of my literature review, studies were found which examined educational institutions using the Baldrige criteria to enhance quality performance, but most were conducted at the postsecondary level. While there have been applications at the secondary level with documented results, no literature could be found to indicate any adoption of the award criteria or application for the award within CTE centers. Given their close working relationships with the business communities, and with Baldrige originating in such business communities, this lack of reported application appeared a surprise. By querying the interest on the part of CTE center leaders and faculty as to their perceptions regarding alignment with the Baldrige criteria and as to their interest in pursuit of an external quality award, by study is an initial step toward filling the hole in this research.

My data reveal that leaders and others in these organizations as a whole do believe their CTE centers are meeting many of the Baldrige quality criteria. This is good news. Yet, the data also indicate continued need for improvement. As noted in my recommendations table (Table 20), and as indicated by survey participants, enhanced strategic planning activities might provide greater structure and opportunity for communication, and regular, subsequent assessment would be of benefit. Applying for an external quality award, such as the Baldrige, may assist with such strategic planning and could unite personnel in a common goal. The application for an external quality award, as well as the implementation of suggested recommendations, would also allow for recognition of CTE centers. This in turn might help provide direction for even further enhanced efforts in these centers, improving the quality in these centers for both the near and distant future.
REFERENCES


Fox, Tom. (2014, April 22). What to do when managers and employees aren’t on the same page [Web log post]. Retrieved from


Appendix A

HSIRB Approval Letter
Date: April 11, 2014

To: Louann Bierlein Palmer, Principal Investigator
   Patricia Allen, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 14-04-03

This letter will serve as confirmation that your research project titled “Career and Technical Education and the Malcolm Baldrige Quality Award in Education” has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may only be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., you must request a post approval change to enroll subjects beyond the number stated in your application under “Number of subjects you want to complete the study.”) Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: April 10, 2015
Appendix B

Data Collection Instrument
The Data Collection Instrument was developed in Survey Monkey.com and notification letters regarding access to the survey were sent out via e-mail.
CTE Quality Initiatives

1. You are invited to participate in a research project entitled "CTE Quality Initiatives" which is designed to understand what quality initiatives are found within CTE centers in Michigan, and to determine what quality awards have been received or may be sought by these centers.

This study is being conducted by Dr. Louann Bierlein Palmer and Patricia Crum-Allen at Western Michigan University, Department of Educational Leadership, Research, and Technology. This research is being conducted as part of the dissertation requirements for Patricia Crum-Allen.

This questionnaire asks about your experiences with quality initiatives and will take approximately 10 minutes to complete.

There is no benefit or cost for your participation. Your replies will be completely anonymous. When you begin the survey, you are consenting to participate in the study. If you do not agree to participate in this research project, simply exit now. If, after beginning the survey, you decide that you do not wish to continue, you may stop at any time. You may choose to not answer any question for any reason. If you have any questions prior to or during the study, you may contact Dr. Louann Bierlein Palmer at (269)387-3596, Patricia Crum-Allen at (616)893-7466, the Human Studies Institutional Review Board at (269)387-8293, or the Vice President for Research at Western Michigan University at (269)387-}

This study was approved by the Western Michigan University Human Subjects Institutional Review Board (HSIRB) on (date). Please do not participate in this study after one year after approval. Participating in this study online indicates your consent for the answers you supply. All surveys must be completed before xxxxxxxx to be included in this study.

1. Do you consent to participate in this study?

☐ Yes

☐ No
**CTE Quality Initiatives**

For each of these areas, please indicate to what extent you agree (or disagree) that this is occurring within your CTE center.

### 2. Leadership

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<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
<td>a) I know my CTE center's mission (what it is trying to accomplish).</td>
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<tr>
<td>b) I know my CTE center's vision (where it is trying to go in the future).</td>
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<tr>
<td>c) Senior (top) leaders at my CTE center use our organization's values to guide us.</td>
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<td>d) Senior (top) leaders at my CTE center create a work environment that helps us do our job.</td>
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<td>e) My CTE center's leadership team shares information about the organization.</td>
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<tr>
<td>f) My CTE center's leadership team asks what I think.</td>
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### 3. Strategic Planning

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<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>a) As it plans for the future, my CTE center asks for my ideas.</td>
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<td>b) My CTE center encourages totally new ideas (innovation).</td>
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<tr>
<td>c) I know the parts of my CTE center's plans that will affect me and my work.</td>
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<tr>
<td>d) I know how to tell if my CTE center is making progress on my work group’s part of the plan.</td>
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<td>e) My CTE center is flexible and can make changes quickly when needed.</td>
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</table>
## CTE Quality Initiatives

### 4. Customer Focus

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<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
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<tbody>
<tr>
<td>a) I know who my most important customers are.</td>
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<td>b) I regularly ask my customers what they need and want.</td>
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<td>c) I ask if my customers are satisfied or dissatisfied with my work.</td>
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<td>d) I am allowed to make decisions to solve problems for my customers.</td>
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<td>e) I also know who my CTE center's most important customers are.</td>
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### 5. Measurement, Analysis, and Knowledge Management

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<th></th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
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<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strong</th>
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<tbody>
<tr>
<td>a) I know how to measure the quality of my work.</td>
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<td>b) I can use this information to make changes that will improve my work.</td>
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<td>c) I know how the measures I use in my work fit into my CTE center's overall measures of improvement.</td>
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<td>d) I get all the important information I need to do my work.</td>
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<td>e) I know how my CTE center as a whole is doing.</td>
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### 6. Workforce Focus

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<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strong</th>
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</thead>
<tbody>
<tr>
<td>a) The people I work with cooperate and work as a team.</td>
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<td>b) My CTE center leadership team encourages me to develop my job skills so I can advance in my career.</td>
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<tr>
<td>c) I am recognized for my work.</td>
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<td>d) I have a safe workplace.</td>
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<tr>
<td>e) My CTE center’s leadership team and my CTE center care about me.</td>
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<td>f) I am committed to my CTE center’s success.</td>
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### 7. Operations Focus

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<th>Strongly Disagree</th>
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<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strong</th>
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<tbody>
<tr>
<td>a) I can get everything I need to do my job.</td>
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<td>b) My CTE center has good processes for doing our work.</td>
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<tr>
<td>c) I have control over my work processes.</td>
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<tr>
<td>d) My CTE center is prepared to handle an emergency.</td>
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### CTE Quality Initiatives

#### 8. Results

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<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
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<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) My work products meet all requirements.</td>
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<tr>
<td>b) My customers are satisfied with my work.</td>
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<tr>
<td>c) I know how well my CTE center is doing financially.</td>
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<tr>
<td>d) My CTE center has the right people and skills to do its work.</td>
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<td>e) My CTE center removes things that get in the way of progress.</td>
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<tr>
<td>f) My CTE center obeys laws and regulations.</td>
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<tr>
<td>g) My CTE center practices high standards and ethics.</td>
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<tr>
<td>h) My CTE center helps me help my community.</td>
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<tr>
<td>i) My CTE center is a good place to work.</td>
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</tbody>
</table>
9. Existing Quality Awards -- Has your CTE center ever:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Considered applying for some external quality award?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>b) Actually applied for some external quality award?</td>
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<tr>
<td>c) Actually received some external quality award?</td>
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</tbody>
</table>

If your CTE center has received one or more quality award(s), name them here.

10. Desire to Apply for a Quality Award

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Completing this survey has influenced my desire to have my CTE center apply for some external quality award(s).</td>
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<tr>
<td>b) I believe that my CTE center is strong enough to actually win some external quality award.</td>
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</tbody>
</table>

11. My position is best described as:

- Principal/Assistant Principal/ Administrator
- Department Chair & Faculty Member
- Faculty Member
- Paraprofessional Faculty Member
- Other __________________________

12. To the best of my knowledge, my CTE center has this many:

Total teaching and administrative staff: __________________________

Total students: __________________________

13. If applicable, what is your personal career cluster area?

_______________________________
14. I would best describe the socioeconomic status of the majority of our students as

- Lower Class
- Lower-Middle Class
- Middle Class
- Upper-Middle Class
- Upper Class

15. I work in the following geographic area of Michigan?

- Southwest Michigan
- Southeast Michigan
- Mid-central Michigan
- Northwest Michigan
- Northeast Michigan
- Upper Peninsula

16. I would best identify the area surrounding my CTE Center as

- Urban/Metropolitan
- Suburban
- Rural
17. What suggestions do you have as to what may be necessary for your CTE center to increase or raise quality awareness?

Thank you for taking the time to complete this survey.
Appendix C

Email Communications
Initial Email Invitation to Potential Participants

From: [Researcher’s email address]
To: [Group email address]
Subject: What quality initiatives are underway in Michigan CTE centers? Respond for a chance to win.

Body of the Email:

I am writing to ask for your participation in a confidential survey that I am conducting as a part of my dissertation project. I am asking for Michigan CTE leaders and faculty to share your perceptions about quality initiatives in Michigan CTE centers.

This is a short survey, which will take you only about ten minutes to complete. Please click on the link below or copy and paste the link into your browser to complete the survey.
https://www.surveymonkey.com/s/CTEQualityInitiatives

Your responses to this survey are very important and will help increase the understanding of both perceptions of quality by both CTE center leaders and faculty and perceptions of which quality initiatives are underway within CTE centers in the State of Michigan. Your participation may also assist Michigan CTE centers with awareness of components of quality awards and how awareness may influence CTE centers in pursuing these awards. As a part of this survey, I am also asking CTE center leaders and faculty to identify their overall strengths as it relates to quality issues and to also identify areas that may be in need of improvement.

Your participation is voluntary, and all your responses will be kept confidential. No personally identifiable information will be associated with your responses in the reports of this data.

I very much appreciate your time. Thank you for your participation in this important study.

Many thanks,

Patricia Allen, Ph.D. Candidate
Educational Leadership/Career & Technical Education
Western Michigan University
From: [Researcher’s email address]
To: [Group email address]
Subject: What quality initiatives are underway in Michigan CTE centers? Respond for a chance to win.

I recently sent you an email asking you to respond to a brief confidential survey to share your perceptions about quality initiatives in Michigan CTE centers. Your responses to this survey are important as they will help increase the understanding of both perceptions of quality by both CTE center leaders and faculty and perceptions of which quality initiatives are underway within CTE centers in the State of Michigan.

To complete the survey, please click on the link below or copy and paste the link into your browser.
https://www.surveymonkey.com/s/CTEQualityInitiatives

If you have already completed the survey, please accept my sincere thanks. If you haven’t had an opportunity to respond, please take ten minutes to complete this short survey.

Your response is very important. Getting direct feedback from CTE center leaders and faculty may assist Michigan CTE centers with awareness of components of quality awards and how awareness may influence CTE centers in pursing these awards.

Your participation is voluntary, and all your responses will be kept confidential. No personally identifiable information will be associated with your responses in the reports of this data.

Sincerely,

Patricia Allen, Ph.D. Candidate
Educational Leadership/Career and Technical Education
Western Michigan University
Follow-up Email #2

From: [Researcher’s email address]
To: [Group email address]
Subject: Please Complete the Survey – Quality Initiatives in Michigan CTE Centers

Body of the Email:

If you have already completed the above survey, I very much appreciate it. If you have
not had a chance to respond yet, please share your perspective by submitting responses to
the survey. You can click on the link below or copy and paste the link into your browser.
https://www.surveymonkey.com/s/CTEQualityInitiatives

CTE center leaders and faculty have very busy schedules, but I hope you will find a few
minutes to complete a short survey about quality initiatives underway in Michigan CTE
centers. Your response will help increase the understanding of quality by both CTE
center leaders and faculty and perceptions of which quality initiatives are underway
within CTE centers in the State of Michigan.

Thank you in advance for your time and thoughtful responses.

Your participation is voluntary, and all your responses will be kept confidential. No
personally identifiable information will be associated with your responses in the reports
of this data.

Sincerely,

Patricia Allen, Ph.D. Candidate
Educational Leadership/Career and Technical Education
Western Michigan University
Appendix D

Quality Awards Received
Quality Awards Received
Comments shared as entered by survey participants

1. State Innovation
2. Accreditation, North Central Association of Colleges and Schools
3. TRAK evaluation
4. Green Ribbon School
5. Manufacturing award, I’m not sure of the name
6. Engineering Center of Excellence Breaking Traditions Award
7. We used to apply and get awards all the time…this is the first year under an ISD
8. Program in Excellence Award
9. Student of the Year
10. Green Ribbon Schools LEED Platinum
11. ISO 9000
12. Non-traditional Student
13. First ISD to receive NCA status
14. Skills USA Advisor of the Year Award
15. Excellence in Practice (multiple awards), Center of Science and Engineering
    Excellence, Michigan Green School Evergreen Award, Teacher of the Year, etc.
16. Excellence in Practice Award, MEEMIC-Michigan Secondary Principals Award
17. Teacher and program recognition, CTE Showcase
18. In the process of applying for accreditation
19. Green School, IVD Engineering Innovation, State award for non-tradition
20. Business Innovations

21. Green Restaurant Certification, American Chef Federation Accreditation. There are others but I am not aware of the names of them. There is one global one given for building sustainability and then some more program specific ones.

22. Accredited by North Central Association

23. Excellence in Practice Award

24. Excellence in Education at the State CTE Conference, two times

25. We received an award at the Annual State CTE Conference for our academic integration practices. I can’t remember what the award is called, sorry.

26. We received a grant from the State for curriculum work

27. State of MI Excellence in CTE Education award. We’ve won it twice, once for academic integration and once for our Teacher Academy Program

28. Teachers Academy wins an award

29. Excellence in Practice Award (2 times) – OCTE

30. All four technical campuses were ISO 9001 certified for 10 years, stopped due to finances. Applied for Baldrige, did not receive

31. Several Exemplary Program Awards from the State of MI, National POS Award, Gender Equity awards, Best of the Best awards (from county), Full ride scholarships annually for some programs, Star awards (county), grants, and I’m sure many more

32. First career center in the State to be RAMP certified; various individual programs have been recognized at the MACUL conference

33. Breaking Traditions Recognition Award
34. Green School, NCA Accreditation
35. Don’t know exact name; Health Sciences State-wide Curriculum Award
36. AYES, NATEF, Advanced ED, NCA
37. I have only worked there for less than two years
38. Governor’s Award
39. National recognition for Safe School work
40. America’s Tooth fairy
41. Not sure of the names, but I know they have received them. Many have to do with our new Center for Sustainable Future facility.
42. NCA accreditation, currently working on AdvancEd accreditation, other community recognition awards
43. Medical and Automotive
44. Several CTE teacher of the years for our center through our Chamber; CTE program excellence awards thru the OCTE-had several winners
45. Skills USA, American Welding Society, Ferris State University Secondary Welding
46. North American Accreditation
47. OCCRA, FFA, National Skills USA, HOSA, and DECA
48. Bronze Medal Award for Outstanding High School
49. Green Schools
50. Green School
51. Excellent in Practice Award MOSPA - Para-pro of the year, Michigan Restaurant Association – Teacher of the year
52. North American Accreditation

53. State Excellence in Practice CTE

54. Excellence in Practice

55. Best Practice

56. MSBO Excellence in Practice, Gov. Economic Summit Innovators to Watch

57. Green School, NCA, Engineering, Science, Mathematics – Education

Convergence, The Best Schools in Michigan

58. Excellence in Practice awards, numerous teachers here have won MOSPA teacher awards, not sure what.

59. Programmatic Accreditation & CTE Excellence Award
Appendix E

Open-Ended Question Comments
Open-ended Question Comments
Comments shared as entered by survey participants.

1. More proactive media. We do so many good things, but not many hear about. TV media, radio might help. We do have technology media (FB, etc.), but not all county residents have internet and access to social media. Prime time local TV would be nice and local radio. Even ads in local and regional newspapers. A lot of residents still have misconceptions about what CTE does.

2. Replace our principal. Poor morale. Would like to find a way for employees to evaluate the principal. We are losing many excellent staff members due to her management style. Staff should not have to be walking on pins and needles all the time. Thank you for allowing us to participate. Hoping this would really make a difference at our career center (BAISD).

3. Maintain and/or increase Vocational Funding.

4. The work environment has changed negatively over the past two years as a result of the principal.

5. I am blessed in that I work with a group of teachers that are self motivated to excellence and continue to win state and national competitions. These programs promote student achievements in the media. We do open houses to expose the community to our programs as well as have online web pages and videos promoting the programs. In addition to our staff at SWWC, I am lucky enough to work with Randy Showerman as my mentor at the MDE for our agriculture career cluster.

6. Our teaching staff is decentralized and compensated under disparate contracts in the surrounding schools. I think that makes it hard for all of our staff to concentrate on the progress of our CTE center as we have additional responsibilities at our "home schools." Centralizing all contracts and housing the programs under one roof would be one way to increase the CTE center program quality (by allowing more interdisciplinary connections to emerge between programs).

7. Replace our upper administration with quality individuals that value teamwork, creativity, and truly understand the demands that educators are dealing with on a day-to-day basis. We need administrators that support the teaching staff and that can build a quality learning environment from the top down. The educators at our CTE center are not encouraged to take risks and do not try and remove barriers from taking chances in improving instruction for our students. Currently, there is a complete void of quality leadership at our CTE center.
8. My Career Center would benefit by having Administration who looks for the positive things staff does and to work with staff to create a good environment.

9. Community forums that allow discussions to take place which discuss the opportunities offered by CTE. Business leaders, parents, and students need to be shown the effectiveness and innovation offered by CTE. They need to find out for themselves it is not the old vocational education they think it is. CTE provides hands-on preparation, creating quality future career pathways for students of all aspirations and socioeconomic status. Our secret needs to be told.

10. Financial support.

11. I don't have any suggestions for this.

12. I work for a high school that has Vocational programs ran through the high school. I am not sure if you wanted me to answer this survey from the perspective of my CTE Department or from the view of my school district. I answered the survey from the view of my school district which I feel does not do a good job at supporting me and my program. Where I feel that my CTE department does a fairly good job at supporting me. A little more guidance in the beginning of the survey would have helped a lot.

13. I think they are doing a great job trying to build the program.

14. Raise the expectation and standard of the quality of student the counselors sends to CTE Schools. Raise the Expectation and Standards by advertising to the community that CTE schools are NOT for students who are not "smart" enough to go to college. But they need to know that all CTE platforms articulate with post secondary institutions.

15. Better funding for programs would drastically improve the quality of our programs.

16. Maintain highly qualified instructional staff through increased wages and relevant PD.

17. Hire a paraprofessional to help supervise & teach.

18. Raise the standard criteria for students to get in. Continue to change the mindset if one person at a time that CTE isn't for kids who aren't college material. CTE isn't just a business but a high school.

20. Incorporate parent teacher conferences into our schedule. Parents talk to parents and we don't have the same kind of parent meetings and contacts like local high schools do. I also think going and talking to the elementary schools and middle school students would help plant some seeds about CTE pathways and help build future enrollments.


22. Funding. We are not looking at the future with a clear head and clear eyes. Funding new technology and new programs will be and is becoming an issue because we are not prepared for the infrastructure updates that are becoming necessary. Most CTE programs are funded via a Charter Millage and Perkins dollars, these will not sustain programs that are changing in the near future nor will they fund new technology/occupations that we are not yet introducing. Solution: buyout older, non-tech savvy instructional staff & save those dollars over a 10 year period to partially fund infrastructure. Fund programs that make sense to a local community. Have stronger relationships between universities and CTE centers i.e. articulation, scholarships, and joint programming throughout the state. Teachers - there is a huge lack of qualified teachers in CTE, especially new technologies and occupations. Young people are not flocking to the profession because it is thought of as lesser than other educational areas i.e. secondary education, elementary education, and postsecondary education. The part that young people are missing about CTE is the relationships we build with students and the time we get to spend teaching rather than babysitting. It is a great opportunity for young people to consider. Solution: See above. Administration. Just like with the lack of teachers there is a lack of upper management personnel. Many administrators are coming from secondary education into our ranks without the proper background to make solid decisions or even understand how CTE learning takes place. Very frustrating when evaluations are based on your students' academic progress instead of their career progress. Solution: Not sure Quality must happen from the top down and the bottom up and everyone in the organization must buy in, including the students. Our universities (Western and Ferris) need to be more proactive in recruitment, you need to be coming into our classrooms letting our students know of the opportunities available, remember quality involves all of us in this business.

23. Get local school districts to validate the importance of the education that CTE provides to students. I would highly suggest educating local teachers and counselors.

25. I live and work in Berrien County. We do not have a CTE center. We have a PA56 consortium … we are considered a Tech Center without walls … so each of our programs run independently. We have periodic CTE Director's meetings; but again, I do not have any influence, nor should I, on how a program is run in a different school district. I did not answer any questions that specifically used the term "CTE center."

26. We have talked about this at staff meetings so do not feel that we are unaware. Maybe see a rubric that an external agency would use to measure us by on this.

27. Please note not all CTE classes are offered within a CTE center. Answers to your questions are very different from a consortium's perspective. Our consortium is extremely involved with our local business and industry partners, which helps in communicating quality awareness. With this said, communication with our partnerships is a continual process which requires ongoing advisory committee input, the need to market student successes and involvement with community partners, etc.

28. We are here to teach careers, not to be an adjunct to academia.

29. Industry driven curriculum.

30. Be involved more at the state level so the standards make sense to all classes that fall under that particular CIP. Professional development needs to be meaningful and useful.

31. Quality is not derived from awards. The problem we have is that there are too many requirements from the State; therefore, not enough time to complete applications. We have quality teachers that get appreciated from their community. The TRAC does not increase quality awareness. The TRAC does not get at the teaching and learning from the teachers. The national tests need to be aligned with the standards (if the standards are aligned with what should be taught in the programs). Let's start awarding the teachers that have high numbers of completers and strong follow up results. We used to get a certificate...that too is gone.

32. Increase media and public awareness of the many valuable training opportunities of CTE. Increase FUNDING for CTE; make changes to MMC to permit more CTE time in the student's schedule; i.e., more core credit embedded, etc.

33. Promote instructor awards to the public.

34. None. We work very hard to increase CTE awareness.

35. Address the poor culture that has been created over the past three years.
36. Promoting our young adults as working and getting a good income from high school with being responsible citizens. College is not an answer for all students learning a skill is the way to build America’s youth.

37. Not at this time.

38. As a whole, our center is doing well in this area.

39. Direct college credit with state colleges.

40. Stop hiring so many PhD holders and require state-level administrators who actually have extensive CTE classroom experience and care about the customers, the students.

41. Hi Pat! Hopefully my feedback is helpful. We miss you.

42. We provide many opportunities for our students and community to participate in our CTE programs: Open House, 10th and 8th grade tours, Parent meetings, Advisory Board Meetings, Student Clubs. Although we do these things, I feel that we need to involve our parents more and maybe something along the line of our Government.

43. Surrounding schools and community must be better educated as to the quality education and opportunities offered to our students. Despite our own efforts to do this is has not happened. We are still viewed as a place where students go when they are not attending college. This needs to be a larger effort on the part of our whole state.

44. I would like to see quality standards and awareness that focuses on student participation and success.

45. Nationwide recognition of the importance and need for CTE to educate the public and give them a reason to care about our existence.

46. More autonomy and trust put in the staff from the top administration. Mistakes should be allowed without shameful, harsh verbal retribution.

47. Too many students get yanked out of class to handle academic problems. Students should handle these problems at their home school.

48. An opportunity to use better Data on our students. I do not think it is the fairest measure to have two of our indicators based on a State Test that we have at best six months to improve our scores on.

49. Climate survey of staff members.
50. Honest open communication with staff.

51. Celebrating even small, internal successes. Being thankful for the work teachers do with students. Having teachers recognized for that work.

52. Better marketing.

53. None.

54. Require vocational certified teachers to have child development and education coursework.

55. Well I would ask you, “What is quality?” If you think quality is process/procedure as manufacturing, problem with that. If you actually put quality into the instruction/curriculum, aim for student performance - good idea. First start with results- completer and concentrator mean what to proficiency? Industry/national certification for all who attend a center high school graduation, for all who attend a center career readiness portfolio, for all who attend a center, college entrance exam completed/passed, or apprenticeship or transition plan. Current TRAC process for program quality is process not performance measured.

56. Hire high quality, competent people.

57. Communication, Communication, and Communication!

58. Provide training and real orientation to new teachers. When someone is new to CTE you should at least explain the basics. Some have never taught in HS and it's hard enough to figure the school system but then you have to deal with multiple schools. There has to be training just for CTE teachers that are new. It makes your first year feel like a complete failure especially in front of the students.

59. Communication that is done more frequently about issues that arise in the center.

60. I think they are doing a great job and do what they can.

61. Keep more meetings with supervisor to make sure all aspects of marketing and individual teacher performance are meeting management's goals.

62. Revamp of personnel for CTE area.

63. Market better.

64. Leadership.
65. Having an idea of what this means and communicating it back to all staff.

66. None.

67. Being new to the school, I feel I am not familiar enough to make any suggestions.

68. The leadership of this CTE lacks vision and decision making processes. They believe in delegation without checking accountability. Lack of instruction to new teachers and seeing that quality teaching is being done. Need all instructors to be on same page, not doing their own thing. More data from the Michigan CTE center for instructors to know what they are doing or what is required. Sorry if this seems so negative, but I feel I am alone in my teaching and lack support or vision from others around me. Thus, you may want to throw this survey out.

69. Building leadership has fallen apart in the last (2) years.......many changes coming from administration with seemingly little input from our CTE Building level. Staff maintains commitment to students, but we are unsure as to the commitment to CTE. We need to hire a committed Principal who has a respected voice at the Cabinet level.

70. Less micro-managing and more time on what we as staff can do.

71. Our ISD and CTE department needs to be investigated closely and carefully for years of unethical use of finances. Both areas also need an evaluation of employee duties and commitments to the efforts and mission of our ISD. I have had the privilege to serve CTE students and local school districts for 29 years. Throughout this time I was taught by honest, passionate leadership my ethical responsibilities to be a part of this organization. Knowing this, it becomes increasingly difficult to watch financial decisions and money (that should/could be used for students) being spent irresponsibly and deliberate participation in unnecessary spending because of a sense of entitlement. Particularly at this time when local and state finances are very challenged, I believe we all need to be extremely conservative and responsible in our spending. Finally, as a taxpayer I am appalled at where and how ISD money is being spent. Ethically, I believe I have a responsibility to do everything in my power to support efforts to change the activities that are not in the best interest of our customer, our students. Change is important and necessary, however I do not believe change in the honest, ethical behaviors that once guided the decision making of our ISD will result in anything positive.

72. Continue to work as team players and teamwork manner. Reduce paperwork.

73. Different leadership.
74. Advertising and marketing to bring awareness to what we have to offer, to change the stereotype that it is a dumping ground for students who do not want to go to college.

75. Build a stronger 'high-tech' standard and base reputation among ESA (ISD) constituents that would promote both proper enrollment and attraction of "college bound" and academically capable students to a "Tech Center"; i.e., to break the 'stereotypical' placement of lower achieving (not college material) students to the "Vo-tech Center." Build stronger political or influential ties to state government officials to bring about 'common ISD wide calendar' dates of operation. Students often miss 20 to 40 (or more!) days a year due to conflict of scheduling. This major problem is bound to get 'monumentally' worse with some schools operating year around and others on the traditional 9 month schedule. There needs to be a 'law/bill' requiring ISD superintendents to agree district wide to start/end and take all exams and vacations at exactly the same date & time. Special needs services would greatly benefit, Tech Centers would gain weeks of additional attendance and hours in daily routine schedule. This law would greatly raise the stature of Tech Ed to a level never seen before, that places students in the labs learning much more often and with a coordinated effort that would increase quality of performance. Local schools and community would benefit from better family scheduling and it's a win/win situation.

76. Hire Qualified Administration with CTE knowledge and experience. Funding has affected our entire school district. A large funding deficit has resulted in school closings, a reduction of Administration staff, front office staff, and teaching staff at our center. Pay cuts have affected morale.

77. Send faculty to conferences that address these issues, only a select few (and always the same) are permitted to attend governor's conference and other events (out of state) like National CTE that discuss issues of quality. Also...please note, I had a hard time answering the geographic & demographic questions, as my CTE center serves 16 districts, pretty equally divided between rural, suburban, and urban...also, my CTE center is on the West coast of the lower peninsula, just about dead center...we don't identify ourselves as SW or NW, just W. Michigan.

78. Ways to increase public awareness, booths at the local fairs, more public displays, we are doing many competitions which are published in local news papers, better business awareness through more interaction with them.

79. Marketing. Improve our marketing of our center.

80. The OCTE has become too involved in the day to day operations of our programs. They tend to micro manage and are not good listeners when it comes to making productive changes in our profession. There are consultants that have very little experience in the field who try to make changes that are not in the best interest of
programs. Even though we hear from Patty things will get better, they have actually gotten worse. There is a lot of inconsistency from one consultant to another when direction is given on programs. It appears they are more interested in unrealistic rules, recapturing funds, and closing programs rather than being user friendly and trying to find positive solutions.

81. Raise standards, quit tapering to the low performing students, follow Perkins guidelines.

82. If the state and federal government would spend less time making sure we are politically correct and stop pushing a cookie cutter one size fits all educational curriculum we might be able to concentrate on teaching and interacting with staff and students instead of always looking over our shoulder.

83. Make sure advisory/business partners are present at all family functions, i.e., open house, parent/student orientation, etc.

84. Change in leadership, current leadership focuses on self promotion to the exclusion of students, staff and community at large. Leadership does not value the input of staff and is top down driven, often with little planning. We have a competent caring staff but this is not recognized or given permission to perform. We have been called by our leadership as lacking professionalism and passion.

85. Continued promotion and showing how many students are able to get college credit and or high quality employment upon exiting the program.

86. Go back to CTE and drop the facade of being an academic institution.

87. n/a

88. Revise and narrow its focus toward CTE. It seems we are far too concerned with trying serving too many needs, which actually decreases our effectiveness by stretching our resources thin. We have lost focus of what a CTE center is designed to do.

89. Top heavy with Administration, let us (the professionals) do our work without micro management, and treat us like the professionals we are.

90. Involve staff in decision making that best fits their cluster. Our organization is top down and does not recognize the needs of the instructors.

91. Advertising and student awareness.

93. Change the focus of some of our home schools. Some of the home schools don't see us as an asset.

94. Truly care about what they are doing, not give it lip service. Care about all the programs.

95. Not sure.

96. When conducting recruiting, they should continue with the hands on concepts. However, they may try to also conduct interviews for certain programs that require students to actually want to be in the program and not just take the class to get away from their home schools.

97. Administration that has an understanding of CTE.

98. Our CTE director is also a k-12 principal, and we are not his priority. Until there is someone for whom we are a priority, I don't think we will be able to raise quality awareness.

99. N/A.
Appendix F

Map of 55 Area Career and Technical Education Centers/Programs in Michigan
Area Career and Technical Education Centers/Programs

1. Allegan County Area Technical & Education Center
2. Alpena Public Schools Career and Tech Center
3. Bay Arenac ISD Career Center
4. Berrien County Career & Technical Education
5. Branch Area Career Center BACC
6. Calhoun Area Technology Center CACTC
7. Capital Area Career Center
8. Cassopolis Tech Center
9. Charlevoix Emmet ISD
10. Clinton County Regional Educational Service Agency - Career Education
11. Covert County Intermediate School District - CTER
12. Delta-Schoolcraft ISD CAREER TECHNICAL EDUCATION
13. Detroit Public Schools Career and Technical Education
15. Downriver Career Technical Consortium
16. Eaton ISD Career Prep Center
17. Ezekiel V. Paddock Center - DVTC
18. Genesee Area Skill Center GASC Technology Center
20. Hillsdale County Intermediate School District Career Technical Education
21. Huron Area Technical Center
22. Ionia Public Schools Heartlands Institute of Technology
23. Jackson Area Career Center
24. Kalamazoo RESA Education for Employment
25. KENT CAREER TECHNICAL CENTER
26. Lake County Educational and Technology Center
27. Lenawee ISD Tech Center LID TECH Center
28. Livingston RESA LATER
29. Livonia Career Technical Center Career Technical Center
30. Macomb-Lake ISD Career Tech Education
31. Macomb-Oscoda Career Center
32. Michael Berry Career Center
33. Montcalm Area Career Center CTC
34. Mt. Pleasant Public Schools Mt. Pleasant Area Technical Center
35. Muskegon Area ISD Career Tech Center
36. Nenaway County CTC NCRESA - Career-Tech
37. Oakland Schools ONTC Online (4 centers)
38. Pellston Public Schools
39. Regional Career Technical Center Upland Public Schools
40. Romeo Engineering and Technology Center
41. Saginaw Perry Schools
42. Sandusky Intermediate School District
43. South Area Career Center Career & Technical Education
44. South and West Wastewater Consortium SWWC
45. Southwest Michigan Technical Education Consortium
46. St. Clair ISD St. Clair TEC
47. St. Joseph County ISD Career Technical Education
48. Taylor Career Center
49. Traverse Bay Area CTC Traverse Bay Intermediate School District
50. Tuscola Technology Center
51. Van Buren Technology Center
52. Warren Career Preparation Center
53. Wayne-Westland William D Ford - Career Technical Center
54. Van Buren Public Schools
55. Washtenaw Area Career Technical Education