DATA-DRIVEN DECISION MAKING IN COMMUNITY COLLEGES: AN INTEGRATIVE MODEL FOR INSTITUTIONAL EFFECTIVENESS

Claude Adam Callery
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DATA-DRIVEN DECISION MAKING IN COMMUNITY COLLEGES: AN INTEGRATIVE MODEL FOR INSTITUTIONAL EFFECTIVENESS

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

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IN

COMMUNITY COLLEGE LEADERSHIP

BY

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CHICAGO, ILLINOIS

April 25, 2012
Community College Leadership Doctoral Program

Dissertation Notification of Completion

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Data-driven Decision Making in Community Colleges: An Integrative Model for Institutional Effectiveness

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Date of Final Approval Meeting
April 25, 2012

We certify this dissertation, submitted by the above named candidate, is fully adequate in scope and quality to satisfactorily meet the dissertation requirement for attaining the Doctor of Education degree in the Community College Leadership Doctoral Program.

Signature

Date
4/25/2012

4/25/2012

4/25/2012
DEDICATION

I would like to dedicate this work to my wife, son, sister, mother, and father. My wife has been an indispensable beacon that has guided me through this voyage. For a quarter of my son’s life I have been engaged in this pursuit and he has been my inspiration and so, I want this effort to show to him that he can accomplish all that he puts his mind to. To my parents who planted the seed of perseverance, this manuscript serves as evidence that I have never stopped seeking wisdom. Lastly to my ancestors, for without their sacrifice, hard work and faith I would not be who I am today.
ACKNOWLEDGEMENTS

Without the support of my wife, Jacqueline, and my son, Marshall, the completion of this marathon would have not been completed. While the completion of this task provides evidence of my personal drive to complete what I begin, it provides future evidence that great challenges cannot be completed without ongoing and consistent support providing needed reassurance. An effort of this magnitude, often times ask the family to take a back seat or remain quiet as the scholar immerses themselves within the vast pool of theoretical concepts and research theories to craft a research methodology and ultimately a completed dissertation. Throughout each step Jacqueline has shown support, offer valuable advice or shown great compassion during times of doubt. Marshall, despite struggling to maneuver around the vast mounds of papers and books, as well as understand my constant obsession with working at the computer at all hours of the day, remained a steady source of inspiration.

To my dissertation committee, Dr. Rebecca Lake, Dr. Dennis Haynes, and Dr. Stephen Spangehl, thank you for your time, effort and advice at the beginning and throughout the entire dissertation process. Your assistance was invaluable. Further, I express my special appreciation for my dissertation advisor. As my dissertation advisor, Dr. Rebecca Lake has been a steady advocate and has never once wavered in her dedication to the program nor in her confidence in me. In reflection, when I realize how much I have grown in just a few short years, I understand and fully acknowledge it has come about because of her dedication to the students, the faculty team she has assembled, the program content and a commitment to achieving the mission of providing community colleges the best trained leaders for the future.
In addition, I want to acknowledge Dr. Thomas Heaney for his thoughtful counsel at the onset of this journey. Further, I must recognize Dr. Tania Giordani and Dr. Scipio A. J. Colin III for their advice and encouragement throughout the transition from a novice learner to an emerging researcher.

Lastly, to my colleagues, past and present at Malcolm X College, I thank them for their constant support. To my dissertation committee thank you all for your critical insights. To all I have acknowledge I owe a lasting debt of gratitude.
ABSTRACT

This qualitative study identified the best practices utilized by community colleges to achieve systemic and cultural agreement in support of the integration of institutional effectiveness measures (key performance indicators) to inform decision making. In addition, the study identifies the relevant motives, organizational structure, and processes to support the continuing organization development as the institution transitions to an information rich decision making environment.

A multi-dimensional conceptual framework consisting of four concepts and theories was used to situate the study. The conceptual framework elements were: John Levin’s (2001) Four Domains of Globalization (globalization), L. E. Greiner’s (1998) Five Stages of Organizational Development (organizational change and development), Robert Stringer’s (2002) Leadership and Organizational Climate model (organizational culture), and lastly a data management analysis framework developed by Rand Corporation researchers Gina Ikemoto and Julie Marsh (2007) (knowledge management).

Three Academic Quality Improvement Program (AQIP) community colleges from the Higher Learning Commission’s North Central Association were selected as participants. Colleges participating in AQIP were selected because Program participants actively pursue the integration of continuous process improvement and total quality management principals into the management practices of their institutions. The merging of these principles into the cultural fabric of the institution is vital to developing a data-driven decision-making environment that steers the organization towards enhanced organizational effectiveness. To ensure transferability of the study’s findings purposefully sampling with random sort and maximum variation were applied to identify the participating colleges.
The study’s findings affirmed research from organizational development literature (Weick, 1993; Greiner, 1998) that states; in order to reduce ambiguity in interpreting data results (information) and achieve maximum benefit, organizational members must have at their disposal a process, data management infrastructure and supporting cultural environment to fully implement data-driven decision making practices throughout the community college organization. Derived from the findings, the Knowledge-management and Effectiveness Integration Model (KEIM) provides as formative process that will help administrators, faculty, and staff transform their institutions into a data-driven decision making college and assist them in understanding the significance, implications, and importance of the data they collect. The KEIM provides a practical implementation approach for community colleges seeking to establish a comprehensive data and knowledge management process as it addresses the behavioral complexity of the organizational culture and highlights leadership roles needed to create a supportive organizational climate for the transformative change.
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Chapter 1- Introduction

Background and Context of the Study

Community colleges maintain a vital strategic position within the United States’ higher education system. For over 100 years, community colleges have enabled traditional and non-traditional students to obtain academic degrees that transfer to four-year universities or to acquire requisite job skills training that leads to employment. Their mission has always been to provide affordable and accessible higher education opportunities for those in their communities. The instructional sphere of today’s comprehensive community college encompasses a foundational liberal arts education, career and technical (vocational) education, continuing education, community and business services, and remedial and developmental education.

According to Brint and Karabel (1989) the immediate tasks before community colleges are:

(a) to extend opportunity and to serve as an agent of educational and social mobility, (b) to promote social equality and to increase economic efficiency,… (c) to answer the pressures of employers and state planners for differentiated education, and (d) to provide a general education for citizens in a democratic society and technical training for workers in an advanced industrial economy (p. 67).

As principal gateways to advance degrees, certificates and employment training, community colleges have always been responsive to the changing economic, political, and social conditions that affect the communities they serve. For the past thirty-years, community colleges have continued to fulfill their core mission, even in the midst of the unprecedented societal changes that have occurred as a consequence of globalization. This ever-expanding international exchange of commerce, ideas, and culture has resulted in substantive economic, cultural, technological and political change within the United States. Globalization has led to the “rise in
public and government emphasis and attention upon a global economy,” thrusting the community college into new areas of focus linked to “societal and economic concerns such as developing new training programs to prepare a globally competent work force” (Levin, 2001, p. 1).

At the same time, concerns have arisen from the public sector about the quality and cost-effectiveness of higher education. Thus, community colleges have had to reexamine the organizational processes used to manage their institutions in order to achieve the level of quality sought by their constituents. The Council on Postsecondary Accreditation (1986) found that the “quality of an educational process relates to (1) the appropriateness of its objectives, (2) effectiveness of the use of resources in pursuing these objectives, and (3) the degree to which objectives are achieved” (p. 4). The impetus for community colleges to be more cost-effective can be traced to three issues.

A decade later, Hudgins and Mahaffey (1998) and Levin (2001) identified the leading concerns regarding higher education that was held by the public. Hudgins and Mahaffey (1998) identified two key issues: “(1) the rising cost of public higher education in competition for limited state resources, and (2) the rising tide of concern about the academic preparation and competency of college graduates entering an increasingly sophisticated global workplace” (p. 130). Levin (2001) cited an additional emerging issue related to the increasing use of technology to deliver educational services to the community and students. He suggested that along with technology-enhanced delivery modalities have come new competitors for community college students. New privately-held companies have created virtual colleges that offer on-line education to the constituents once served solely by community colleges.
Thus, it is understandable that these internal and external factors have exerted pressure on community colleges to attend to their level of quality and cost effectiveness. Levin (2001) argued “postsecondary institutions have been forced into a businesslike orientation, with its attendant behaviors of efficiency and productivity” (p. 9). Utilizing generally accepted business principles, such as, Total Quality Management, Continuous Quality Improvement, Strategic Planning, and Systems Management, to enhance institutional effectiveness has become the prescription of choice for many community colleges. Adopting these business models and strategies has required colleges to transform their operating practices in order to improve accountability, effectiveness, and transparency for stakeholders.

To build competencies in the areas of accountability and institutional effectiveness, many community colleges have joined the Higher Learning Commission’s Academic Quality Improvement Program (AQIP). The AQIP approach to accreditation of higher education institutions does not dictate which quality management method a member college should adopt. Instead, the program strives to support colleges in their efforts to replicate the achievements of high performance organizations. Community colleges that choose to participate in the AQIP receive training in the principles of continuous quality management, strategic planning, the assessment of business processes, assessment of program outcomes and accountability reporting.

Although colleges participating in the AQIP receive training from the Higher Learning Commission, many practical questions remain unanswered, particularly the issues related to the implementation of an organization-wide commitment to data-driven decision-making. Community college leaders must have timely, concise, and relevant data to inform and justify decisions pertinent to the organization’s effectiveness and efficiency. To make good use of the data, organizations need to understand how to analyze multiple forms of data in order to create
actionable information and knowledge. Further, the community college leaders must understand how to create and support an organizational culture that is conducive to and supportive of data-driven decision-making.

This study seeks to define an implementation approach for expanding the use of data to inform operational, decision making and to enhance institutional effectiveness within community colleges. By defining a specific protocol, the college can establish an organizational climate that increases the preparedness of administrators, faculty, and staff to conduct performance measurement and data analysis, thus creating active communities of practice dedicated to data-driven decision making. Further, by developing the requisite skills to conduct data management and performance reporting, colleges can disseminate relevant knowledge across departmental boundaries, thereby encouraging the exchange of ideas and enhancing institutional effectiveness.

**Purpose of the Study**

The purpose of this study is to identify the data driven decision-making processes and procedures utilized by community colleges to enhance institutional effectiveness.

**Research Driving Questions**

The research driving questions arising from the purpose are:

1. What issues identified by community college administrators motivated them to enhance institutional effectiveness?
2. How and in what ways was the data-driven quality initiative implemented?
3. What data-driven decision-making processes and procedures are currently used in the college?
4. Does organizational culture facilitate or discourage the use of data-driven decision making processes and procedures to enhance institutional effectiveness?

**Significance of the Study**

The current environment for institutions of higher education is dynamic and fluid, driven by economic, technological, political, cultural and global factors (Levin, 2001). Community colleges navigating these forces of change must continue to be flexible and adaptable while maintaining quality and efficiency. The enhancement of institutional effectiveness in this challenging environment will be a primary goal for community colleges. One way that community colleges can achieve this goal is by developing a formal process for utilizing data-driven decision-making.

Little research exists to guide community college leaders in the development of a process that: (1) contains clearly defined strategies and techniques for integrating data-driven decision making into the organization’s culture; and (2) has as its goal the improvement of institutional effectiveness. This study will add to the body of research the implementation of data-driven decision making within the community college. As community college leaders begin to understand the relationship between data-driven decision making and their associated processes, their ability to convert data into actionable knowledge will improve. Also, they can benefit from the identification of the key drivers that enhance the quality of services and institutional effectiveness.

**Brief Literature Review**

The selection of specific relevant theories and concepts assists to bound the study and serve as a framework for data analysis. The theories and concepts that provide the conceptual framework for this study are: (a) John Levin’s 4 Domains of Globalization, (b) Total Quality
Management (TQM), (c) organizational culture and climate, (d) data-driven decision-making, and (e) institutional effectiveness.

**Globalization and Four Domains of Influence.**

During the late 1990s, Levin conducted a seven case comparative study of community colleges located in the United States and Canada and developed an analytical framework grounded in the theories of globalization and organizational change. His goal was to determine the extent to which globalization forces affect and influence community colleges. Levin concluded that globalization was a multidimensional phenomenon. "While the global economy played a dominant role in institutional behaviors and actions, other global flows such as culture and information technology affected institutions" (Levin, 2001, p. xviii). Levin titled his model’s four components of influence as The Domains of Globalization: Economic, Cultural, Information (technology) and Political. These four domains help foster an understanding of the influence of globalization on all aspects of the community college.

**Total Quality Management.**

During the 1950s, statistician and university professor W. Edwards Deming developed the concept of Total Quality Management (TQM) to provide business with a method to improve resource management and overall business performance. “Deming conceived that institutional growth arises from a continuous cycle of refinements and improvements based on data. Rather than emphasizing individual performance improvement, he saw the value of focusing on institutional processes” (Chambliss, 2003, pp. 2-3).

The principles of Total Quality Management have been introduced to community colleges in the form of Continuous Quality Improvement (CQI) strategies, which includes such elements as process improvement, balanced scorecard, student learning assessment and
accreditation standards. “Adopting continuous improvement strategies enabled higher education institutions to realize improvements in three primary domains: services for students and stakeholders, processes to make it easier for employees to do their jobs, and institutional outcomes” (Rice & Taylor, 2003, p. 9). Use of CQI approaches improves institutional outcomes by providing college administrative leaders a structured approach for assessing internal business processes and orients all members of the college to view process improvement as a vital part of their responsibilities. Further, the data and information gathered from these processes seeds the data-driven decision-making process across all levels of the organization.

**Data-driven Decision Making.**

The concept of data-driven decision-making can be found in several areas of general management literature; including, knowledge management (Jo, 2008; Leveille, 2006; Mills, 2006), score carding (Swan, 2009), and benchmarking (Niven, 2008). Data-driven decision-making is not a single activity, but “can best be described as the use of systemically and systematically collected data to guide a range of decisions” (Swan, 2009, p. 107). It is a process that has as its foundation the following assumption:

Data is made up of raw facts, numbers and text and becomes information when it is put into context so that the relationships, between data can be understood. Knowledge occurs when information is combined with experience and judgment to understand the patterns of the information (Swan, 2009, p. 108).

The best practices from business management literature indicate that there are fundamental questions to be asked and answered with respect to a data-based accountability system. According to Leveille (2006), leaders in higher education who seek to implement a data-driven decision making process would ask the following:

- What data are needed?
- Do the data already exist and can they be obtained? What are the characteristics of the data in terms of type, quality, resolution, precision, accuracy, and coverage?
• Is the quantity of data sufficient for interested users?
• If the data do not exist, what data need to be generated?
• What implications are there for the subsequent analysis? (p. 140).

Research literature recommended that data streams managed by a dedicated data management team and consolidated into central databases operated by the information technology group within the organization (Weischadle, 2005). By establishing a consistent approach to data management, college leaders can generate information that supports the college’s strategic planning activities and informs decisions.

Figure 1 illustrates the integrative action of data-driven decision-making processes within the hierarchy of the community college, the typical data flows and principal parties involved in the process. Operational data crosses departmental boundaries, as well as hierarchical boundaries that exist between external constituent groups (i.e. board of trustees) and the senior leadership team of the college.
In order to ensure institutional effectiveness, community colleges must engage in comprehensive assessments of their internal processes while remaining cognizant of the...
outcomes desired by all their constituent groups (i.e., students, businesses and communities). Of central concern to colleges and stakeholders, has been the ability of the colleges to execute effectively and efficiently the following essential processes: (a) strategic planning, (b) resource allocation; (c) implement strategic plan objectives; and (d) control (for the adjustment of activities to satisfy organizational goals). This challenge has resulted in community colleges’ adoption of management practices, formerly found only in corporations, to improve their management and to develop measures that benchmark their performance and outcomes to those of high performing community colleges.

In their efforts to improve institutional effectiveness, college administrators have come to realize that organization’s culture is a fundamental element that greatly influences outcome. Organizational culture can impact the pace and sustainability of organizational development, change and improvement. Consequently, understanding an institution’s organizational culture is essential if college leaders are to overcome today’s challenges and garner the commitment of all organizational members, which is necessary to implement new initiatives and programs.

Organizational Culture and Community Colleges.

The concept of organizational culture represents the fusion of two distinct concepts, organization and culture. In this context, the organization represents the association of individuals organized for work, and culture encompasses the cumulative values, behaviors and beliefs of all the individuals who comprise the group. Alvesson (2002), defined organizational culture as “…the interpretation of events, ideas and experiences that are influenced and shaped by groups within which they live” (p. 3).

Within the past two decades, researchers have discovered the fact that “understanding organizational culture is essential to improving overall organizational performance because
organizational culture has a significant, not secondary, influence on organizational behavior. And predictably, the ideal of culture management began to appear in higher education literature” (Kuh & Whitt, 1988, p. iii). Further, Alvesson (2002) proposed that culture extends beyond traditions and is “central in governing the understanding of behavior, social events, institutions and processes. Culture is the setting in which these phenomena become comprehensible and meaningful” (pp. 3-4). Community college leaders who understand the link between organizational culture and organizational performance are better positioned to meet their overall operational goals and objectives. Therefore, it is the confluence of these two constructs, the organization and the culture residing within, that leaders must consider while focusing on implementing institutional effectiveness efforts.

The literature on organizational culture brought to light the importance of understanding the traditions or historical record found within higher education institutions and their influence on institutional performance. These traditions represent the cultures that govern the behaviors of the members of the organization and can facilitate or derail an administrator’s efforts to introduce and later sustain initiatives to enhance institutional effectiveness. It is important for community colleges leaders to be proactive in creating an organizational climate, which would, in turn facilitate institutional effectiveness. As part of the inquiry, this study will describe the organizational climate the participating colleges have established to support data-driven decision-making.

**Research Design**

This research is a qualitative case study situated in the interpretive paradigm. The qualitative inquiry is naturalistic and seeks to obtain a holistic understanding of an event, individual or organization. The researcher is immersed within the environment of participant in
order to gain a thorough insight into the observed phenomenon, the experiences of the
participants and their expressed perspectives. Qualitative inquiries are appropriate means for
gathering information when the study seeks to explore a phenomenon of which little is known.

Case Study.

This study employs the case study approach to garner data and insights necessary to
address the research purpose. A case study serves to bound or frames the phenomenon or topic
of the research. The “boundary” established for this study is specifically crafted by the research
purpose, the geographic dispersal of sites and the participants and the selection criteria. Yin
(2003) stated that the case study is the “preferred strategy when how or why questions are being
posed, when the investigator has little control over events, and when the focus is on a
contemporary phenomenon within some real-life context” (p. 1).

Incorporating data-driven decision making into the culture of a community college and
addressing the concerns of all academic stakeholders can generate numerous complex situations
and problematic relationships. Yin (2003) advocated the case study method as well suited to
address these environments by enabling the investigator to retain the holistic and meaningful
characteristics of real-life events while reporting findings that are rich and contextual.
Site and Participant Selection

Creswell (2007) suggested that purposeful sampling is a vital component of qualitative research. Purposeful sampling means that participants and sites are deliberately selected for the study because they can inform understanding and provide a perspective that addresses the research purpose. Merriam (1998) adds that “purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned” (p. 61). Thus, specific sites and participants were selected because they are information-rich and will provide insights on the issues of central importance to the study’s purpose.

Site Selection.

For this study, three community colleges located in the Midwest and are members of the Higher Learning Commission’s North Central Association were selected as sites. The selection criteria for site participants consisted of three components: (a) length of time as an AQIP institution; (b) diversity in institution size (based on annual student FTE enrollment); and (c) location in the Midwest. In addition, the select community colleges were nominated as exemplary institutions having completed at least three annual cycles as members of AQIP. Given their length of tenure in AQIP, these institutions would have gained experience using data for measurement, benchmarking, and decision support.

The selection criteria for the sites are intended to achieve, maximum variation by size and location in the sample. According to Creswell (2007), the maximum variation approach allows the researcher to select a small number of units or cases that maximize the diversity of the research. The objective of this selection approach was to allow during data analysis, for the
identification of commonalities, differences, and shared patterns that may exist within the sample.

**Participant Selection.**

Individuals chosen for the study were institutional leaders designated to lead the AQIP at their community college. These positions included the vice president, academic dean and faculty member from each school. Nine participants were selected because of their senior position in the community college and because they have direct responsibility for managing and participating in the AQIP. Further, they were in the best position to comment on issues regarding institutional data flows, data management, data use and data-driven decision making processes used to enhance institutional effectiveness.

**Data Collection.**

Yin (2003) stressed that, “the case study’s unique strength is its ability to deal with a full variety of evidence, such as documents, artifacts, interviews, and observations” (p. 14). Four data collection methods were used in this study: semi-structured interviews, survey, documents, and field notes. Semi-structured interviews facilitated the gathering of data and insights from participants with probing follow-up questions for clarification and explanation. The survey provided an avenue to collect participant demographic information as well as an opportunity for participants to assess the organizational climate of their college. Documents collected included the AQIP documents and on-line publications at each institution. These items provided a unique perspective, because their production was grounded in the context under study. “Documents of all types can help the researcher uncover meaning, develop understanding and discover insights relevant to the research problem” (Merriam, 1998, p. 133). Field notes supplemented all the data collection methods. They documented observations made during each interview and contained
descriptions of the physical setting, participants, the sequence of activities proceeding and occurring during the interview, the tenor of the conversation and any non-verbal communication queues. Field notes provide a means of documenting reflective thoughts related to the interviews and other data collection methods.

**Data Analysis.**

The conceptual framework (theories and concepts) served as a priori themes that supported data analysis. Coding of interview transcripts, survey, and documents allowed for the categorizing of themes. An open coding system was employed to permit the discovery of patterns and a priori themes as well as any and all emergent themes. Analysis will lead to the grouping of commonalities and differences to assist in solidifying the research findings and conclusions.

**Definition of Terms**

Several key business terms are used throughout this study. To ensure a common understanding and application of the terms to this study several terms are defined.

**Adaptive Organization**

Refers to modifications and alterations in the organization or its components in order to adjust to changes in the external environment (Sporn, 1999, p. 20).

**Benchmarking**

Assumes the pursuit of a “best-in-class’ identity. Typifies studying the performance of other premiere institutions along a specific dimension and defining the organization’s level of performance as a target, and develop a strategy a set of activities to achieve that performance (Kaplan & Norton, 1996, p. 14).

**Learning Organization**

Organizations where people continually expand their capacity to create the results they truly desire…where people are continually learning to see the whole together (Senge, 2006, p. 14).

**Knowledge Management**

Data (facts, numbers or text) becomes information when it is put into context so that the relationships can be understood. Further when combined with experience and judgment to learn the patterns in the
information to inform decision making (Swan, 2009, p. 107).

**Organization Development**

Organized development focuses on how organizations naturally evolve and grow. As a natural course, organizations experience a predictable sequence of stages of growth and change, known as the organizational life cycle. (Thompson, 2008, p. 205).

**Organizational Scorecard**

Measures organizational performance across various perspectives deemed appropriate for the management of the institution. These perspectives include: financial, internal organizational processes and constituent requirements and are published in a report to be viewed by the senior administrative team (Kaplan & Norton, 1996, p.37).

**Strategic Planning**

Long range planning that focuses on the organization as a whole. It is a broad and general plan developed to reach long-term objectives. (Certo & Certo, 2009, p. 203).

**Organization of the Dissertation**

This study is organized into six chapters. Chapters 1 summarize the history of community colleges, provide a background of the problem, states the purpose of the study, and lists the research questions. It also summarizes the key theories and concepts that informed the framework of the study and presents the significance of the study to the field of education, administration, particularly as it related to community colleges.

Chapter 2 provides a review of the literature pertinent to this study. The literature review discusses the impact of the globalization on higher education and in particular the efforts underway by community colleges to address new stakeholder requirements for greater accountability and improved institutional effectiveness. The challenges and changing role and responsibilities of community college are explored. The review of literature concludes with an extensive review of institutional effectiveness and the role organizational culture and climate in supporting or inhibiting organizational change.
Chapter 3 provides a description of the research design, methodology, participant selection procedures, and the ethical considerations for the study. Grounded in a qualitative interpretive paradigm, this study makes use of the case study research design. This design was employed because it is well suited to the examination of a phenomenon about which little is known. An explanation and rationale of the data collection and analysis process are presented and the strategies used in maintaining rigor and trustworthiness of the study are described.

Chapter 4 summarizes select or reduced data from each college in a condensed and organized forma, which consists of data displays or word tables linked to specific research questions, a priori themes or emergent themes. Anecdotal evidence was gathered from transcripts and internal documents. Each type of evidence was mapped to each research question. Organizing data systematically aided data analysis.

Chapter 5 presents the findings of the study. The comprehensive analysis of the data relied on the theoretical propositions discussed in the literature review that informed the study’s purpose and research design. In addition, the data were rigorously screened to uncover competing explanations for the observations or comments given by the participants. Resultant themes were documented with narratives.

Chapter 6 presents the study’s conclusions and implications for the community college field. Based on the study’s findings, the Knowledge-management and Effectiveness Integration Model (KEIM) is presented. The model can guide community college leaders and department heads through the integration process as they incorporate data-driven decision making practices throughout their institutions. Also, a detailed integration plan is included to support the internal team leading the development of Key Performance Indicators (KPIs), as well as the required data
management infrastructure needed. The chapter ends with recommendations for further research.
Chapter 2 - Review Of Literature

Introduction

This chapter provides a review of the scholarly research that informs and situates the study. The purpose of this study is to identify the data driven decision-making processes and procedures utilized by community colleges to enhance institutional effectiveness. In this context, the study will, (1) identify best practices utilized by select community colleges to fuse continuous quality improvement practices into their decision-making to achieve mission outcomes and (2) generate a descriptive profile of the organizational climate that exist at these participating institutions. In striving to address the research purpose and research questions, this chapter provides a literature review of the theories and concepts used to construct the study’s conceptual framework. To prepare the conceptual grounding for this study several areas of scholarship were reviewed including: globalization, management science (i.e., total quality management and performance reporting), systems theory, organizational change and development, organizational culture, learning organizations, and knowledge management.

Although numerous theories and concepts of decision making could have been applied to this study, four models were identified as best suited to provide the foundation for this study and to address institutional effectiveness, as well as the cultural themes posed within the research questions. These concepts and theories were deemed appropriate frameworks to explore approaches utilized by colleges to (a) manage work processes and (b) create organizational climates that motivate the development of new behaviors to encourage on-going analytical inquiries and assessments that result in improved organizational performance and effectiveness. The concepts and theories presented in this literature review include: John Levin’s (2001) Four Domains of Globalization (globalization), L. E. Greiner’s (1998) Five Stages of Organizational
Development (organizational change and development), Robert Stringer’s (2002) Leadership and Organizational Climate model (organizational culture), and lastly a data management analysis framework developed by Rand Corporation researchers Gina Ikemoto and Julie Marsh (2007) (knowledge management). This multi-dimensional conceptual framework served as the lens to situate the research and to conduct the analysis of the findings.

In response to societal, political, and technological forces impacting their internal work processes, community colleges are now fully engaged in activities to redesign their institutions. The globalization phenomenon, which began during the 1980s, continues to be influential in effecting the potency of the societal, political, and technological forces and continues to have a profound effect on all sectors of society. This is especially relevant in the manner in which resources are combined to deliver needed services to society. This assertion is particularly true for community colleges, because of their multi-function mission to offer educational services including, providing college transfer courses, career and technical education (CTE) programs and credentialing, remedial and developmental instruction, noncredit instruction (e.g., literacy training, professional development) and contract training. To be effective in delivering these vital services to their stakeholders, community college leaders must:

- secure limited capital to maintain programs and facilities;
- hire competent administrators, faculty and staff to manage college operations during a time of rapidly changing consumer preferences and business and industry needs; and
- deliver their various curriculums through multiple channels including traditional face-to-face setting as well as in distant learning formats.
The chapter begins with a historical overview that highlights the changes that have occurred in the external environment in which community colleges now operate. Following the historical review, the discussion will transition to a brief overview of the strategic management process. This explanation is important to include because of the clear evidence of the increasing use of strategic management practices (management science) by leaders in higher education as these institutions increase focus on becoming data-driven organizations. The explanatory commentary describes the significance of data-driven decision-making within the strategic management process and its role as a feedback mechanism to update academic leaders on the status of current operations and new strategic initiatives.

**Historic Context: Era of Assessment**

An examination of higher education, business and organizational development literature, clearly reveals that the period between 1980 and 2000, marked a pivotal movement to a more global society. The former industrial-driven society had given way to a new knowledge based society driven by rapid innovation in communications, information distribution, technology and business practices. These innovations permeated all sectors of society within the United States resulting in unprecedented changes in organizational design and management processes and procedures. For post-secondary institutions, this period of transformational change was characterized by the heightened attention by stakeholders and constituents (state and federal agencies, boards of trustees, community agencies and students) on the ability of higher education institutions to meet the new academic and vocational training needs of a technologically advanced and highly integrated global society. In *Focusing on the Problem: Accountability and Effectiveness in the Community College*, prominent higher education researcher, Peter Ewell, described the public’s perceptions of all institutions of higher education thusly: “that higher
education is in a state of crisis – faced with accusations that its accrediting systems and self-evaluations are inadequate and self-serving, and that widespread abuse, collusion, mismanagement, and outright fabrication are common” (1994, p. 24). Stakeholders have become increasingly determined to motivate colleges to become more productive, cost-efficient stewards of the public’s trust and resources. This was clearly evident in the actions taken by key constituents. Several state and federal legislative bodies mandated post-secondary institutions to become more accountable. They also developed performance-based funding mechanisms to prompt colleges to change their operating practices to become more transparent to their constituents and responsive to changing market conditions. As a result, post-secondary institutions were forced to contend with pervasive criticism from constituents and stakeholders and to address their demands for more and improved accountability of resource utilization. These demands converged with calls from the same constituents for improved student learning outcomes.

The solution for simultaneously addressing newly formed stakeholder requirements and the obligatory mission objectives of post-secondary institutions, e.g., consisting of degree conveyance and career and technical training, led to substantive enhancements to the higher education system focused principally on enhancing overall institutional effectiveness across academics and all departments.

The term institutional effectiveness is often used interchangeably with organizational effectiveness. Over the past thirty years, literature and research exploring the relationship between institutional effectiveness and post-secondary institutions has been widely cited. No generally accepted definition exist for institutional effectiveness, however academic scholars and accreditation agencies have introduced specific themes as guiding principles to create a common
understanding of institutional effectiveness and its integration into the management philosophy of higher education institutions (Alfred, 2011; Cameron, 1986; Cameron & Whetten, 1983; Community College Roundtable, 1994; Council on Postsecondary Accreditation, 1986; Ewell, 2011; Mulkins-Manning, 2011; Roueche, Johnson & Roueche, 1997).

Two main themes serve to explain and describe institutional effectiveness. According to the first theme institutional effectiveness is a singular measurement or multiple set of measurements that describe “the level of quality of the educational process as it relates to the appropriateness of its objectives and the effectiveness of the use of resources” (Council on Postsecondary Accreditation, 1986, p. 4). The second theme presents institutional effectiveness as an organizational assessment process that is linked to “producing outcomes that meet constituency needs and can conclusively document the outcomes it is producing as a reflection of its mission” (Community College Roundtable, 1994, p. 16). Toward the end of the 1990s, a new approach emerged, which integrated these themes and established new rules of conduct for post-secondary institutions. These new rules relied heavily on the use of management science tools and practices, to inform higher education leaders as they attempt to improve organizational effectiveness.

Under these new standards, colleges would generate information for internal as well as external consumption and review. The internal data and information generated by colleges would guide senior institutional leaders, administrators and staff as they prioritize operating strategies to improve work processes and develop organizational initiatives to improve the delivery of academic services. Concurrently, data and information produced for external reporting would provide documented evidence for public review and allow stakeholders to evaluate independently the performance and effectiveness of academic programs in contrast to

Although constituents believed that achieving an environment of greater transparency and accountability through the use of management science tools would improve the overall effectiveness of post-secondary institutions, the higher education community did not enthusiastically endorse the use of these business-centric management techniques. Opponents of business management techniques observed that the techniques often focused on standardization to meet the needs of the targeted customer. Standardization, they believed, was not an appropriate approach for post-secondary institutions to implement, because the academic environment is very fluid and academic leaders often need the liberty to customize curriculum to better serve students and the community. For example, community colleges serve a highly diverse constituent base and for some administrators, faculty and staff the use of the metaphor of student-as-customer tended to compromise the purpose of higher education. Stressing this point-of-view, Bensimon (1995) argued that, higher education needs a theory of administration that is based on “difference” rather than a theory such as total quality management which supports strategies that reduce variation and promote the “logic of sameness” (p. 606). In addition, there were expressed concerns regarding the definition of quality, the identification of distinct measures of institutional effectiveness and the proper recognition of the relationship that exist between institution and the student continued to spur the debate between academic scholars (Bensimon, 1995; Houston, 2007). Over time, voices of dissent quieted and proponents of business management techniques began applying continuous quality improvement techniques, such as Total Quality Management (TQM), to post-secondary education institutions. The higher education community believed that total quality management and its associated philosophies,
such as data-driven decision-making, could foster a collaborative environment which would, in turn, lead to a higher level of departmental achievement and facilitate the planning and execution of sustainable process improvements (Hertzler, 1994; Aliff, 1996; Rice & Taylor, 2003).

To formally assist higher education institutions in becoming more proficient in the use of these management science practices, the six accreditation commissions took the lead in developing a set of measures and analytical protocols that would become the analytical-basis for an institutional effectiveness process that could be integrated into the management structures found in most post-secondary institutions (Council on Postsecondary Accreditation, 1986; Birnbaum, 1988; Community College Roundtable, 1994; Hudgins & Williams, 1997; Roueche, Johnson & Roueche, 1997; Rowley, Lujan & Dolence, 1997; Cameron & Smart, 1998; Alfred, Shults & Seybert, 2007). Their objective was to develop a process with a common language that academic leaders could understand and adapt in order to create a set of ongoing and systematic institutional processes and practices that included, (1) statistical performance indicators that include strategic planning, (2) the identification and measurement of outcomes across all institutional units and (3) the use of data and assessment results to inform decision making” (Manning, 2011, p. 13).

The Southern Association of Colleges and Schools proposed portfolios of measures which were further refined by higher education scholars over the years. These measures or metrics evolved into the collection of core indicators of effectiveness for community colleges that now appear in numerous publications. These core indicators were designed to represent the critical functions implemented by community colleges to achieve their missions. Examples of these core indicators included, but were not limited to: student goal attainment, persistence, rate of transfer, critical literacy skills and responsiveness to community needs (Roueche, Johnson & Roueche, 1997; Alfred, Shults & Seybert, 2007). To develop these quality indicators, the Southern Association of Colleges and Schools (SACS) incorporated measures used by the
business community to assess financial and operational performance. Similar to colleges and universities, the business community was under great pressure to respond to shareholder demands for higher productivity and transparency. The Southern Association of Colleges and Schools Accreditation developed analytic methods (i.e., score-carding and benchmarking) that incorporated the central tenets of Deming’s Total Quality Management principles, and in addition promoted the use of continuous quality improvement principles and a management philosophy based on a systems approach to improve operational performance of higher education institutions (Scherkenbach, 1991; Swiss, 1992; Delavigne & Robertson, 1994; George & Weimerskirch, 1994; Dean & Bowen, 1994; Hertzler, 1994; Bensimon, 1995; Freed & Klugman, 1996; Aliff, 1996a; Aliff, 1996b; O’Neil, Bensimon, Diamond & Moore, 1999; Chambliss, 2003; Houston, 2007). These core indicators developed by SACS were further refined in 1999 and 2007 to include measures of student learning and general education competencies (Alfred, Shults & Seybert, 2007).

Today, colleges and universities remain very much under public scrutiny as expectations remain high for a higher quality level of performance continues for these institutions. After three decades, stakeholders seek not just the *promise* that colleges will become more effective, but stakeholders demand that colleges demonstrate through measured results how they have met their institutional goals. Although colleges in many regions have actively experimented with various approaches to establish an institutional effectiveness process that can be replicated across the higher education sector, there have been ongoing challenges with implementing a comprehensive process within these academic institutions (Alfred, 2011; Mulkins-Manning, 2011; Ewell, 2011). The literature cites several impediments or challenges to the successful integration of institutional effectiveness which include:
• The institutional effectiveness process can be information intensive and organization decision makers may lack mechanisms (processes and procedures) to select relevant data and information to make rational choices among available alternatives.

• Academic leaders are unable to achieve systemic and cultural agreement to support the installation of institutional effectiveness measures and achieve the planned level of impact or influence on the college and its mission.

• Institutional leaders have not identified the relevant motives to build a base of active support for full dissemination of institutional effectiveness measures throughout the organization.

• Colleges have turned their attention toward developing unit-level metrics, but have not identified common institutional effectiveness measures for use throughout the college.

Studying exemplary community colleges could uncover best practices that other institutions can adopt in order to overcome one or all of the challenges cited. Subsequent examination of the literature published after 2000 revealed that scholarly attention has shifted from defining the mechanism for establishing an institutional effectiveness process within community colleges to presenting strategies for assisting colleges in overcoming these challenges and becoming better equipped at data management and performance reporting (Data-driven decision-making) (Leveille, 2006; Ewell, 2011). Ewell (2011) clearly expresses the shift in emphasis by accreditation agencies in the following comments when he stated,

originally envisioned, institutional effectiveness was intended to be applied to all aspects of an institution’s operations…the new wave of attention to institutional effectiveness on the part of community colleges, moreover emerged in an altered environment with respect to the technical ability to calculate the kinds of comparative measures of performance that realizing the concepts of institutional effectiveness requires (p. 23-24).

Repeatedly, literature regarding institutional effectiveness has consistently emphasized the important role of operational data in supporting decision making or performing post-audits of programs to evaluate their success. Yet, the literature appears to separate the discussions of institutional effectiveness from data management and treats these concepts as independent
management activities, thus it could be argued that this separation has contributed to the process implementation challenges cited earlier. To successfully, create a data-driven decision-making culture within community colleges, organizational members must be able to integrate the definition of institutional effectiveness with the data management principles found in knowledge management. Community colleges can become communities of practice that possess the requisite skills to gather, summarize, and interpret operational results to support continuous organizational improvement. The next section introduces the concept of data-driven decision-making and explains how knowledge management is central to the management of data in support of enhancing institutional effectiveness.

**Data-driven Decision-making**

It is important to highlight the conceptual interconnectedness and similar nomenclature of institutional effectiveness and data-driven decision making. Data-driven decision-making uses organizational data or indicators (i.e. financial and student enrollment statistics) and other relevant information (e.g. assessment, core indicator measures) to inform decisions. The goal of data-driven decision making (DDDM) is “to collect, analyze and interpret meaningful data to make institutional improvement in the areas of curriculum, instruction, institutional efficiency and student learning outcomes” (Rudy & Conrad, 2004, p. 2). Researchers from the Rand Corporation, Marsh, Pane, and Hamilton (2006) noted that DDDM in the education sector is modeled after successful practices from industry and manufacturing, such as Total Quality Control Management (TQM), Organizational Learning, and Continuous Quality Improvement (CQI). These business methodologies have been used for a number of years to provide managers with the analytical support needed to develop strategic plans for organizational improvement as well as to meet the mission.
Forming the foundation of data-driven decision-making is the search for performance measures, standards known as benchmarks that reflect the best in a class among those performing business activities. These best practices become the evidence-basis upon which colleges build upon to analyze and adapt for use in their own organizations (Fischer, 1994, pp. S-2).

Of great importance to community college leaders is understanding how to successfully conduct data-driven decision-making within the higher education community. Critical to success is building a high-level of competence in the use of data analysis tools among the various communities of practice (administration, faculty and staff) and instructing these groups in the practice of data interpretation and reporting. While establishing an environment committed to DDDM, the community colleges must be careful to avoid the indiscriminate gathering of data. The indiscriminate collection of data could result in the organization having to sift thru volumes of irrelevant data and more importantly hinder the formation of timely decisions and impede acceptance of the DDDM process among organizational members. The desired outcome is to have organizational members contribute to a process that encourages organizational members to draw on lessons of the past and integrate these experiences with findings from the data analysis to enhance institutional effectiveness.

To achieve this objective, organizational leaders must create an institutional environment in which data assembled for analysis are representative of the work processes under review; have a high degree of accuracy and when used influences decisions that produce outcomes that can be replicated over time. The literature is clear that this level of proficiency in the use of organizational performance data is best achieved when an organization fully adopts a knowledge management posture (Leveille, 2006; Mills, 2006; Swan, 2009).

Figure 2 represents the integration of knowledge management and data-driven decision-making.
“Knowledge management systems are a blend of both technical and social mechanisms that enable the effective creation and transmission of knowledge assets to improve performance” (Swan, 2009, p. 100). Data quality is continually enhanced through the ongoing use of the knowledge management system by individuals seeking answers to institutional issues. The knowledge management systems consist of three core components (process evaluation, data which are illustrated in Figure 3.

To operationalize the knowledge management system within a community college, the college leaders must create meaningful institutional performance benchmarks that are contextual in nature and flow from the mission objectives of the programs, all departments, and key
elements of the college’s strategic plan. DDDM should not be thought of as merely a data gathering process, but as a systematic process to generate useful and relevant knowledge by combining data, information, and the situational context for the event or program under study. According to Swan (2009), “data is made up of raw facts, numbers and text and becomes information when it is put into context so that the relationships between data can be understood...DDDM represents the use of systematically collected data to guide a range of decisions” (pp. 107-108).

Figure 4 illustrates Swan’s point-of view emphasizing that data by itself is not sufficient to implement a strong data-driven decision making process. In addition to the data, the organizational members must have the skills to also analyze and interpret the data in relation to multiple factors (i.e., plan objectives or unit-level goals) in order to generate information that will guide decision making.

Figure 4. Data Blended With Situational Context Becomes Operational Information

To be effective in the implementation of data-driven decision-making within the community college, users need to identify real-time measures and establish trust in the quality of the data. To this point, Weischadle (2005) recommends that academic administrators “carefully consider the measures they use to make and implement plans. They need to shift attention to internal areas and develop indicators that place demands on day-to-day activities” (p. 29).
Further attention must also be given to understanding how data are influenced by the parameters of culture, institutional past practice, reliability, accuracy, and stakeholder requirements (Fischer, 1994). In addition, the information must be communicated in a format that gives visibility of data to all academic units and non-academic areas as appropriate. The following model developed by Ikemoto and March (2007) consolidates the recommendations into a unified framework. This framework and the accompanying analysis templates were used to evaluate the current-state of the DDDM process at each of the colleges participating in this study. Figure 5 shows the Ikemoto & Marsh (2007) framework in its entirety.

Figure 5. Ikemoto and Marsh’s DDDM Process Model for Higher Education

The key element or core of the Ikemoto and Marsh (2007) model is the three-component knowledge tree highlighted in the center of the model. The three components are data, information and knowledge. The knowledge tree represents an information exchange process by
which discrete data elements are gathered and combined and then evaluated by organizational leaders to identify patterns in the data that would help to explain how work processes currently function. Further these patterns can be used by organizational leaders to formulate strategies to improve productivity and resource utilization. These components are reflective of the building blocks of the theoretical framework of knowledge management and are at the heart of the data-driven decision making process and resides as a foundational element of the Higher Learning Commission’s (HLC) Academic Quality Improvement Framework (AQIP).

Therefore, to achieve success in the use of data-driven decision-making users must give full attention to the quality, timeliness and relevancy of data. Further, organizational members must be adequately trained to view data-driven decision-making not as a singular activity focused only on data collection, but as a broader activity that leads to meaningful performance benchmarks that help academic leaders achieve their mission outcomes. Knowledge creation that leads to enhanced institutional effectiveness is the ultimate objective of data-driven decision-making and strong knowledge management better prepares the institution for the dynamic global environment.

Effective training that leads to the effective use of data to inform institution-wide decision making within a post-secondary institution requires organizational design change in the organizational culture and climate. Specifically, moving college culture and climate toward the integration an institutional effectiveness process, underpinned by a comprehensive data management program, requires that organizational members acquire the cognitive abilities and technical skills to become better adept at using performance data to make decisions. Organization leaders (administrators, faculty and staff) serve a vital role in establishing a supportive climate within the college to assist the organization in its transition. Further, as
institutional knowledge sharing expands and the organizational culture eventually evolves to a culture of learning. Research has shown that organizations including colleges demonstrating a strong culture of learning “adapt their core productive processes through the discovery and implementation of new knowledge” (Dill, 1999). The employees of these colleges operate with a shared vision and are strong at forming effective data-driven decision making strategies that promote proactive and unified approaches toward total community college management (Banathy, 1999; Weischadle, 2005; Leveille, 2006).

**Academic Quality Improvement Program Academic**

To support colleges in their efforts to create an environment supportive of data-driven decision-making, the Higher Learning Commission in 2000 developed a new accreditation process that would encourage colleges to actively pursue continuous quality improvement and institutional effectiveness. This new process marked an understanding, by accrediting agencies and researchers, that colleges cannot make the transition to a new operational model focused on effectiveness without the additional exploration and development of new organizational design approaches. As a consequence, the Academic Quality Improvement Program (AQIP) was conceived of as the bridge that would facilitate the each college’s transition to a culture of learning. “The Academic Quality Improvement Program’s goal is to infuse the principles and benefits of continuous improvement into the culture of colleges and universities in order to assure and advance the quality of higher education” (Higher Learning Commission, 2003, pp. 6-11). Prior to AQIP, colleges were assessed under the Program to Evaluate and Advance Quality (PEAQ). The PEAQ program represents a comprehensive evaluation process that supports either the initial or continued candidacy of colleges seeking accreditation. Colleges or universities seeking accreditation participate in a two part process that includes a comprehensive
self-study and peer review conducted every ten years (Higher Learning Commission, 2003).

AQIP defers from PEAQ, because it focus on distinctive qualities found in highly
effective organizations to colleges and universities. These qualities are: mission focus;
collaborative involvement from all disciplines; supportive leadership; promotion of a learning
environment, maintaining respect for people; being adaptive to change; encourage planning for
innovation; and ensure integrity (Higher Learning Commission, 2003). The AQIP provides
community college members training and support in conducting ongoing assessment of their
institutions so that they can be more responsive to their constituents and improve overall
outcomes. Further, AQIP integrates three interlocking organizational development approaches
for enhancing institutional effectiveness: (1) continuous quality improvement, (2) systems
analysis and (3) formation of a learning organization.

Under the guidance of the HLC, community college leaders participate in a series of
workshops and planning sessions in which they develop system plans. The plans contain
targeted action projects that are designed to improve existing organizational processes. Figure 6
illustrates the nine AQIP categories or processes use within the AQIP framework to describe the
interrelationships among systems that exist in all college or universities settings.
Academic Quality Improvement Program a newer organizational management approach creates a new knowledge environment that can support a community college as it develops the processes and capabilities needed to systematically manage data streams and improve operational effectiveness. In essence, AQIP provides support as the college shifts its existing cultural beliefs to become a one of a culture of evidence.

In summary, the research literature is explicit in its conclusion that post-secondary institutions are under great pressure to improve operational effectiveness and thereby achieve mission-outcomes. Further, there is consensus that as colleges become more data-driven outcomes will be measureable and reproducible. However, there is currently a significant gap in the literature describing or promoting best practices for guiding community colleges through the organizational change process needed to establish a viable institutional effectiveness process. The insights and findings from this study will help to close this apparent gap in research. The study will offer strategies for addressing data management issues that can derail efforts to incorporate performance measures into daily decision making activities. Further, the study will explore the organizational change strategies deployed by several exemplary community colleges to diffuse the principles of data-driven decision-making throughout their organizations.
Globalization

All organizations, including higher education institutions, are influenced by, economic, political, informational and cultural forces present in the internal and external environment in which they exist. The significance of the globalization phenomenon arises from its far reaching influence on the environmental forces and the internal business processes. Due to the phenomenon of globalization, countries throughout the world quickly developed the capacity compete effectively in the global marketplace. With this shift in global markets, many countries have been able to displace the United States and Europe in industry sectors that were once Western strongholds. This displacement had a profound effect on the private and public sectors within the United States leading to permanent changes how these sectors manage their operations (Lawrence, 2002; Friedman, 2007). In particular, public entities such as community colleges have undergone significant structural and programmatic changes to address new requirements imposed by state and federal agencies, board of trustees and core constituents (i.e. students and businesses). Thus, it has become imperative for community colleges to understand the new landscape that globalization has created. John Levin’s (2001) research provides relevant insights into the impacts of globalization on community colleges and this study.

Levin’s Four Domains of Globalization.

John Levin (2001) conducted a seven case comparative study of community colleges located in the United States and Canada and, using four dimensions, evaluated the responses of community colleges. His analysis led to the creation of an analytical framework for understanding the impact of globalization on the actions and interactions of college personnel and the structural changes that occurred in these institutions (Levin, 2001). In his framework, Levin specified four forces: economic, political, culture, and technology/information, each of
which is variable in nature and can impact the inputs or critical resources (labor, capital and information) used by the college to make the decisions reflective of their mission. Therefore, it is incumbent upon college leaders to understand the influence that these forces have on the college’s ability to deliver academic services and understand how to adjust an organization’s operational processes to improve efficiency and effectiveness. Figure 7 illustrates Levin’s domains of globalization and their relationship upon the community college (the organization).

Figure 7. Levin’s Four Globalization Domains and their relationship to Community Colleges

Levin’s Domains Relationship to Community Colleges.

The research by Levin (2001) is most relevant to this study because community colleges reflect and are shaped by the economic, social, and political strengths and weaknesses of their local communities. These communities are, in turn, influenced by local, national and global pressures and forces. Consequently, the colleges are responsive to their constituents’ changing needs and must make crucial data-driven decisions and reallocate resources as appropriate to revise programming and curriculum. Levin’s framework advances the argument that
globalization forces continually impinge on the communities in which the colleges reside leading to adaptive changes within colleges as they strive to fulfill their role as the open access providers of affordable and comprehensive education and training programs.

**Domain I Economics.**

The first force resides within the domain of economics. Economics is a measure of the financial health of an organization, community and nation as well as an indirect indicator of societal change. Specifically, changing employment patterns, fluctuations in personal income levels and revisions to government policies, represent the general economic environment in which community colleges must operate in to fulfill their mission and obligations to their communities. Affirming the power of economics upon the function of community colleges, Levin (2001) wrote that,

> Economic forces were among the most if not the most influential forces upon college behaviors and actions…State economies and political philosophies of the governments in power determined government fiscal allocations to colleges and pushed for reform and productivity. Future, U.S. Federal policy was oriented in two directions: to improve the unfavorably perceived work-force productivity of the United States and to upgrade the work force and potential workers in order to remove the potential burden from employers and the government (pp.53-54).

As a group, community colleges across the country are facing uncertain futures due to either insufficient or unpredictable funding. Many states use formulaic allocation protocols and metrics to determine the allocation of funding for capital improvements and programs for community colleges. The economic challenge faced by these institutions are due to rising enrollments, required program enhancements, and the fact that the funding generated by these calculations is not keeping up with rising costs of doing business. The revenue available to the vast majority of community colleges is constrained in large part by the decreased appropriation of state and local tax revenues and limited grant funds. Such a financial deficit could result in a
crisis that threatens the affordability of, and accessibility to the comprehensive education offered by community colleges. The limited number of options for funding will force community colleges to raise tuition, thus threatening enrollment, and to make tough decisions streamlining internal processes that improve efficiencies and lower operating costs.

**Domain II Political.**

Levin’s (2001) research of the political domain recognized how and in what ways government policy has impacted community college operations. External political influences are evident in the form of policy mandates as demonstrated by the types and subjects of grants funding and enrollment funding formulas for post-secondary institutions. Internally, legislation has influenced the types of goals that college’s put into their annual strategic plans and budgets. The progressive legislative agenda has led to permanent organizational structural changes, modifications to program content and/or reallocation of capital resource requirements within community colleges. Levin (2001) documented that “government policies clearly endeavored to direct community colleges toward economic goals emphasizing work-force training and state economic competitiveness as outcomes, compelling colleges to improve efficiencies, increase productivity, and become accountable to government and responsive to business and industry” (p. 99).

Today, the majority of local, state and federal government policies are directed toward stimulating economic development. As key providers of academic and employee skills training, community colleges have been identified as essential participants in this effort. Government regulators, accrediting agencies and the general public insist that college’s document and validate student achievement. In particular, higher education institutions are required “to demonstrate efficiency, quality, and stewardship of public money” (Burd, 1992, p. 100).
Therefore, community college leaders have had to institute new procedures and policies that facilitate collection of quantitative and qualitative data and that present measurable evidence of accountability to their stakeholders. Ewell (1987) described these new standards of accountability as having two distinct dimensions: (1) discharging assigned institutional missions effectively, and (2) demonstrating that these responsibilities have in fact been effectively discharged. He asserted that institutions need to understand “the substance of the obligation with specific types of performance and the kinds of information about performance appropriate to provide evidence of effective performance” (Ewell, 1987, p.3).

Figure 8 presents a model of the new compliance requirements for performance management and reporting imposed by government agencies on the higher education sector. This model illustrates the new blueprint of compliance for community colleges encourages the adoption and configuration of new operating processes, revise organizational structures and the installation of new systems of accountability. The new configuration provides all external stakeholders greater evidence that the institution is satisfying the needs and demands of students and the community-at-large. Further, by establishing explicit forms of control, benchmarks and strategic goals, the organization could reach “consensual validation” (Weick, 1979, p. 5) or agreement among all college employees (administrators, faculty and staff) that the actions taken to deliver the college’s offerings (academic courses, certificates, career and technical programs, and remedial and professional development courses) are meeting the requirements of the stakeholders, so important in this global environment.
Since the 1950s, legislative actions began to move the higher education community away from self-regulation and into the realm of greater public oversight. Under self-regulation, administrators in higher education institutions had greater autonomy in the management of course curricula and programs, as well as the methods used to measure student learning outcomes. For many years, colleges and universities answered only to their boards of trustees and were not subject to the scrutiny of the general public. The communication between the public and the institutions was primarily one-way, where-by institutions only shared limited statistical data (e.g., enrollment, graduation rates or faculty demographic data) and not the information related to the actual operations of the college or university. By the early 1980s, however, the general public was growing increasingly concerned about the quality of academic
degrees and programs offered by post-secondary institutions as well as the adequacy of the return on invested public funds. This trend could be attributed to three key issues:

(a) a general belief by the public that the country was experiencing a decline in economic competitiveness driven by globalization, (b) the rising cost of public higher education in competition for limited state resources, and (c) a rising tide of concern about the academic preparation and competency of college graduates entering an increasingly sophisticated global workplace (Hudgins and Mahaffey, 1998, p. 130).

By the 1990s, the federal government was committed to improving the accountability of all its agencies, as well as the accountability of the institutions it oversaw and/or funded. In 1994, the federal legislature enacted the Government Performance and Results Act (GPRA). This act laid the foundation for the accountability movement that swept through the government and influenced how government agencies responsible for oversight and funding for higher education would institute future accountability and accreditation standards for these institutions. The Government Performance and Results Act enacted in 1994 addressed accountability for the government itself. The act required that federally-funded agencies develop and implement accountability systems based on performance measurement including setting goals and objectives and measuring progress toward achieving them. Further, to improve government operational planning, the GPRA promoted the use of strategic planning techniques found in the business community (Niven, 2008). According to Rowley, Lujan and Dolence (1997),

The shift toward more conservative politics…signaled a diminution of the days of government largesse, especially in national funding of research, state-supported growth, and the subsidy of tuition. Under the umbrella of accountability and efficiency, the United States government entities became increasingly interested in cutting perceived waste and in balancing budgets (p. 7).

These accountability practices were soon expanded to higher education institutions. Elected officials initiated inquiries into institutional performance and requested student learning outcomes (SLO). This requirement for increased accountability gave rise to the assessment movement. The assessment or outcomes assessment movement focused on the measurement of
educational achievement by college students and was characterized by institutional choice in matters of measurement, public disclosure, and the use of results (Ewell, 2009)

As a consequence, the six higher education accrediting agencies embraced the accountability movement. It was at this time, the Higher Learning Commission (HLC) instituted the Academic Quality Improvement Program (AQIP). Therefore, a favorable condition was fostered for post-secondary institutions to incorporate management science tools (e.g., benchmarking, balance score-carding) within their normal decision making activities and ongoing assessment of organization performance. These tools while common lexicons in the private sector, were not widely used in higher education. For many community colleges, adapting these tools to current management as a means to enhance institutional effectiveness would require changes in habits of mind, processes and institutional policies.

**Domain III Information Technology.**

Levin’s (2001) analysis of the information domain centered on the pervasive influence of information technologies on productivity and efficiency behaviors in community colleges. In the workplace, employers require well trained and technologically proficient workers. Community colleges address these needs by providing career and technical education, customized training and continuing education courses for a significant portion of the workforce. To remain relevant, community colleges must insure business and industry needs are met which involves providing curriculum that is current and facilities that are equipped with the latest hardware and software resources. In addition, classroom and laboratory technologies must be supported by well-trained faculty and staff. Advancement in computer technology has led to permanent changes in instruction delivery where there is now a greater reliance on electronically mediated instruction (i.e., on-line education), computer-networked communications and smart classrooms (i.e.,
Internet and multi-media stations in classrooms). The speed of information retrieval and delivery is accelerated by these new technologies.

As conditions continue to favor greater use and access of information technologies, senior administrators must examine technology’s impact on current institutional operations, values and norms. Increased reliance on data to inform decision making shifts the focus to the process of evaluating system-wide performance. Past practices relied heavily on the autonomy of departmental administrators in governance and competition for resources. They independently developed criteria for evaluating departments in the community college. In contrast, community college administrators who utilize technology and data to manage their institutions must adjust their social mechanisms to incorporate a system-wide approach for enhancing institutional effectiveness. Though data-driven decision-making (DDDM) the organizational culture as it becomes less dependent on monitoring departments independently and instead relies on achieving outcomes by utilizing a collaborative and networked environment. Data is collected on a system-wide basis, summarized and evaluated by cross-functional teams. Employees are then informed about the system and data are used to evaluate options for improving the performance of programs and academic services.

Incorporating the use of evolving information technologies into community colleges requires: updates and modifications to facilities which will result in new capital expenditures, recruitment of new faculty; and the establishment of new budget priorities in light of current state and federal funding restrictions. Due to increased attention on performance and accountability, community college leaders must now rely more heavily on advanced information systems designed to effectively and efficiently archive and retrieve data. For example, statistical and qualitative data that inform, as well as support strategic planning and execution must be
communicated, via the Internet and Extranet. The ease of access to data afforded by technology improves the quality and accuracy of measuring organizational performance and helps institutions plan for the future. The use of technology also simplifies organizational analysis and enhances the capability of organizational members to use data to support internal decision making. While new technologies streamline data flows, they also can inundate employees with too much information which can, in turn, lower productivity. To overcome this information overload institutions must establish processes to help employees’ transition to a culture of evidence-based decision making. Consequently, it is necessary for community colleges to train employees in the effective use of data by formally defining the protocols for collecting, storing and retrieving data in order to improve college operations and student leaning outcomes.

Hence, the insights and perspective of exemplary community colleges can benefit other institutions whether they are planning to integrate data-driven decision-making practices into their management processes or currently using such practices. This study will examine the protocols existing within the participating colleges that have been used successfully to meet accountability standards and summarize the productivity and efficiency behaviors evident within their organizations.

Domain IV Culture.

The final domain of Levin’s research is the domain of culture. To embrace a new culture of evidence and decision making within the community college, the organization has to evolve from an existing culture centered on teaching and learning to a culture that integrates “two value systems –the academic and the corporate” (Levin, 2001, p. 65). The culture of academic institutions can be characterize as having an “internal dynamic that has its roots in the history of a teaching organization and derives its force from the values, processes, and goals held by those
most involved in the organization’s working” (Tierney, 1988, p. 3). Community college cultures pursue multiple objectives simultaneously and rely to a greater extent on consensus to guide decision making. As a consequence, community college leaders including the president and vice-presidents often canvass administrators, faculty and staff about pertinent issues and solicit their recommendations regarding new solutions to resolve on-going concerns.

These employee groups (administrators, faculty and staff) are vital sub-cultures of the community college’s organizational culture and represent intersecting networks and viewpoints that must be involved in the successful integration of all change initiatives. Failure to include these sub-cultures could significantly hinder the diffusion of organizational change throughout the institution. According to Keup, Walker, Astin & Lindholm (2001), “sub-cultures can create symbolic spheres of ownership (i.e., feelings of ownership regarding symbolic territories or turf) on campus that create serious stumbling blocks to change” (p. 4).

Organizational resistance has its roots within the institution’s culture and its sub-cultures. The intensity of the resistance to change correlates to the strength of the bonds that exist between group members as well as their willingness to embrace change as a facilitator of organizational improvement. Thus, it is imperative that senior administrators take the time to understand their institution’s organizational culture and the cognitive influences that culture has on the behavior of organizational members. Tierney (1998) emphasizes this point when he cautioned that, “…the lack of understanding about the role of organizational culture in improving management and institutional performance inhibits our ability to address challenges that face higher education” (p. 4). He recommended that higher education administrators seek to minimize the occurrence and consequences of cultural conflict by “fostering the development of shared goals” (Tierney 1988, p. 5). Without question all stakeholders (administrative, staff, faculty, and
students) within the institution as well as outside constituents, and local and global forces influence and are influenced by these cultural dimensions.

Consequently, to support organizational development during periods of cultural change, the leadership team within community colleges must assess organization readiness and promote a set of shared values that will guide organizational members through the period of transition until the initiative is fully implemented. As Levy and Merry (1986) stressed “transformation often deals with a condition in which an organization cannot continue functioning as before” (p. ix). Changing the behavior, culture and internal ideology within a community college requires a leadership group committed to fundamental change for the benefit of the organization.

In light of Levin’s four domains and the forces they bring to bear on higher education institutions plus the emphasis on accountability, underscore the fact that community college leaders need to be proactive in their stewardship of the institution. Higher education researchers Alfred, Shultes and Seybert (2007) summarized the new circumstances of the past two decades best by stating that the globalization movement “has forced most community colleges to place more emphasis on providing value to stakeholders in an environment in which change is the only constant” (p. v). Consequently, community college administrators must address how to measure the effectiveness of their organizations and how to assess organizational changes that will enable them to adapt more quickly to future variations in their environment. For many, this involves the crafting of new procedures and policies that allow them to present measurable evidence of quality and accountability to their stakeholders.

For community colleges operating in today’s global environment, organizational transformation requires the establishment of new institutional behaviors that support evidence-based decision-making to assess and improve institutional effectiveness. Community college
leaders must assess whether the current organizational structure (i.e., roles, responsibilities and reporting hierarchies) will support needed innovations. In addition, taking into account the fragility of shifting paradigms within their institution leaders must carefully determine the achievable pace of change within their college. The pace of change will be established by several important factors including the planning and control function, organizational support mechanisms (e.g., resource allocation or rewards), and organizational climate. Organizational climate is representative of the readiness of the organization to support change and incorporates within its construct organizational culture. This study strives to provide insights regarding how organizational culture assist or hinders the organization’s progress toward establishing a culture of evidence.

**Strategic Management Process**

In today’s environment, higher education institutions, must operate within a new context of institutional effectiveness. A context that is characterized by the pursuit of organizational information, knowledge and data to improve efficiencies in the delivery of academic services and ancillary services, and the achievement the effective operation of the organization. Community colleges face unprecedented challenges in carrying out their mission-centric responsibilities thus they are prompted to seek innovative management initiatives to strengthen the organization’s functions and capabilities. At the heart of these new management capabilities is the need for the development and implementation of a formal planning and control function. The purpose of the planning and control function is to install a seamless process that advances from the planning stage through implementation and concludes at a feedback or control stage. During this final control stage, college leaders review data and information to determine whether or not planned outcomes have been achieved. If the outcomes have not been achieved, the leaders can use the
data to revise the plan which re-addresses the action required to move closer to the stated goals. The business community has long used a process known as the strategic management process to manage their organizations to meet their planned goals.

The strategic management process relies on organizational performance data to support short- and long-term planning, operational actions, as well as, program and course development. Though simple in its elements, the process itself is complex. Figure 9 illustrates the core process stages of the strategic management process. The core stages of this iterative process are strategic planning, organizing (resource allocation), execution (leadership), and control (monitoring).

Figure 9. Four Stages of the Strategic Management Process

This process is depicted as a circular function, because continuous careful attention and feedback are required to provide college administrators with the data and information needed to update and adjust all strategic plans. Embedded within the strategic management process, is a secondary process known as data-driven decision-making (DDDM). The DDDM process generates crucial findings that help to shape the initial perceptions and outcomes produced by the organizational system. Decidedly, after recurrent use and analysis, the data-driven decision-
making process can foster an understanding among organizational members of how the system responds to internal and external forces within its operational sphere of influence.

Having a formal and well-documented data-driven decision-making process assists organizational leaders with institutional planning by generating needed key performance indicators (KPIs) or measures. These key measures form the core of the strategic management process and are used to prioritize operating strategies, allocate valued resources (organizing), govern the pace of implementation (leadership execution) and provide feedback and monitoring information on the plan (control) which includes program achievements. Further, this operational data can be used to benchmark organizational performance of all the community college divisions or departments against independent standards of excellence if available.

Incorporating the use of the strategic management practice and subsequent data driven decision making fulfills the mandates of external constituents, such as accrediting agencies and funding sources, for greater transparency and accountability. Further, the use of strategic management practices provides an avenue to support independent assessment of the institution’s performance against the stated mission. The growing challenge for community college administrators, faculty and staff is to acquire the discerning judgment needed to measure and assess data and information pertinent to their individual departments while addressing operational issues arising from the external forces impinging on the institution. In addition, employees must build their professional competencies in order to understand how to use this data to support recommended operating strategies to enhance the overall institutional effectiveness. As a consequence, to instill and/or maintain institutional effectiveness, organizational change requires an examination of current work processes and business practices plus a comprehensive determination of future processes needed to facilitate the integration of new innovative
management with institutional effective initiatives. This study seeks insights into how leaders at exemplary community colleges implement these types of initiatives.

**Organizational Change and The Community College**

The literature on organizational change is most appropriate for the purpose of this study as it strived to document the structural (management, hierarchy, and/or leadership) refinements set into motion by several community colleges as they positioned their institutions to satisfy the accountability requirements established by their stakeholders. Organizational change is an inevitable occurrence for all organizations throughout their life cycle from “birth, growth, decline and death” (Thompson, 2008, p. 204). The prevalence of change within organizations is due to the ever changing economic, social, technological and political forces discussed in Levin’s (2001) research. Organizational behaviorists have described organizational change as a “process by which organizations move from their present state to some desired future state in order to increase their effectiveness” (Jones, 2007, p.100).

While, several concepts and theories have been used to describe the pace of organizational change has been described by several concepts and theories, there is strong agreement in the literature that organizational change proceeds in staggered intervals. Although a steady methodical continuum of change maybe desirable, irregular progression of change has its value. These uneven intervals allow for organizational leaders to direct and observe the change process while the organization re-aligns.

Noted social psychologist, Kurt Lewin (1975) described organizational change as a behavioral phenomenon. Lewin, a recognized as a leader in social psychology, was one of the first psychologists to study the relationship between group dynamics and organizational development. He believed human behavior is a function of both the person and the environment.
Given that an organization is comprised of people, changes to the organizational environment will require individual organizational members and the groups within it to find equilibrium. Following an organizational change, this stable equilibrium must be reestablished before the organization can again efficiently attend to business. He called his framework *Field Theory* (Lewin, 1951). Field theory posits that all organizations have several inter-dependent behavioral influencers that create a “dynamic field” or a current-state in which all members of the organization work and operate in (p. 25). These influencers include histories (culture), work practices, personality and emotion. When the organization undergoes an organizational change, the current state is altered and new organizational behaviors are constructed. Field theory analyzes the causal relations between the external forces that interact with the organizational boundaries and the resulting behavioral changes that occur among the organizational members.

The results of the analysis provide direction to organizational leaders on how to proceed in moving the organization back toward equilibrium following an organizational change event.

He found that organizations undergo periods of unfreezing and freezing in the presence of change. He theorized that individuals need to “unfreeze their old habits and ways and then adopt new behaviors. Further, new behaviors will only be effective if the individual refreezes them (i.e., practices new behaviors)” (Thompson, 2008, p. 208). Lewin posited that between these stages, environmental forces are evenly balanced, and the organization is in a state of inertia. The theory of unfreezing and freezing has been integrated into the research of many contemporary organizational theorists.

While Lewin focused on the pace of organizational change, organizational development scholars Miller (1982), Gersick (1991), Jones (2007) and Greenberg and Baron (2008) focused on the cause and effect outcomes that arise depending on the type of change occurring within the
organization. The description of this type of severity of change was characterized by Miller (1982), and later by Jones (2007), as either evolutionary or revolutionary. Evolutionary change was described as gradual, incremental, and narrow. In contrast, revolutionary change was described as rapid, dramatic and broadly focused. Using the above characterizations, Lewin’s model of unfreezing followed by refreezing is an example of evolutionary, or incremental change.

Gersick’s (1991) initial research centered on how organizational systems evolve and change. Interestingly, she describes the movement of organizational change as “punctuated equilibrium”. The pattern of punctuated equilibrium involves relatively long periods of equilibrium. It is during this time that an organization may engage only incremental change, punctuated with short episodes of discontinuity during which an organization’s survival may depend on its ability to transform itself.

The concept of punctuated equilibrium has application in describing the documented history of organizational evolution experienced by community colleges over the past 100 years. Community colleges have undergone significant structural changes as part of their development cycle, and on numerous occasions, they have shown great flexibility, responsiveness and innovation to meet the public’s demands. In particular, there have been several milestones that have triggered change, the Servicemen's Readjustment Act of 1944 (GI Bill), the 1947 President's Commission on Higher Education (Truman Commission), the large number of Baby Boomers enrolling in colleges and universities, and the increased requirements for performance accountability. Each milestone is marked by an evolution in the mission of the community college and adoption of a new operating philosophy. In keeping with Gersick’s (1991) concept
of punctuated equilibrium, the majority of these changes have been incremental and the institutions have expanded their capabilities.

Community colleges are distinguished from other institutions of higher education by their commitment to open access, comprehensiveness in course and program offerings, and community outreach (Vaughn, 2006). In their history, community colleges have undergone significant structural changes as part of their development cycle. In particular there have been several specific milestones that have triggered incremental (evolutionary) or transformative (revolutionary) change. Each milestone represented the adoption of a new operating philosophy for community colleges following an evolution in its mission. Most importantly, each change has been incremental and the institutions have expanded their capabilities over the span of a number of years between each milestone. Vaughn’s (2006) illustration (Figure 10) describes community colleges key historical milestone events which initiated change in the institutions.
Recently organizational development scholars, Greenberg and Baron (2008), incorporate the presence of technology as a critical lever of organizational change. Greenberg and Baron (2008) viewed organizational change as a “planned or unplanned transformation in an organization’s structure, technology, and/or people” (p.100). In their opinion, the consequence of organizational change in today’s context is the total redesign of roles and responsibilities, new training methods to develop the skills of organizational members.

Because of the complexity of aligning organizational structure, resources and programs with new mission directives, a different skill-set is essential for administrators, faculty and staff. In order to guide and sustain change within any community college, change champions are now required. These are individuals who strongly believe in change and will promote the benefits inside the organization and “tap people’s commitment and capacity to learn at all levels” Smith, 2001, p. 2). Change champions can be administrators, faculty, or staff who have been assigned the role as task force leaders. In this capacity, they provide directional leadership and inform others on the status and progress of college initiatives. The change process is an ongoing and continuous process occurring within community colleges. Therefore, champions and the
mechanisms to sustain organizational change must be available within the institution. The goal of this study is not simply to acknowledge that change events have occurred and are ongoing within community colleges, but to also identify the insights and perspectives of the participants as they strive toward executing their strategies for achieving a culture of evidence that will support their strategic plans.

**Greiner Model Organizational Development**

Organizational development involves a coordinated and systematic engagement by the organization’s senior administrators, faculty and staff to improve the quality and efficiency of organizational processes through the sharing of knowledge across the organization. The literature established the *organization* as a formal boundary that interacts with its environment. A noted organizational development scholar, Schein (1965) described this interaction between organizations and their environment as a “rational coordination of the activities of a number of people for the achievement of some common explicit purpose through the division of labor and hierarchy of authority” (p.75). The data-driven decision-making process facilitates the coordinated efforts of the college’s operations and programs and leads to an ordered selection of activities to execute the mission. To arrive at the desired future-state, the organization must address the individual variables and work settings governed by structure (process and procedures) and culture (embedded norms, values, and behavior patterns).

Research in the area of organizational development has shown that organizational improvement does not take place in an indiscriminate manner, but proceeds in sequential stages as the organization tests new strategies and paradigms during the change process (Kotter, 1988; Greiner, 1998). The new strategies pursued by the study’s participating colleges, in response to
their external environmental demands centered on strategic planning, total quality management, and performance reporting.

The application of Greiner’s (1998) research as a methodology to describe the stages of organizational development has been especially sweeping and continues to be used as an evaluative tool to present explanations of the transitional change experienced by organizations across several industry sectors including higher education. He believes that organizations transition through sequential phases, and he provides specific detail on implementation steps, the changing role of senior management during each phase and the growth in participatory management as collaboration grows among organizational members. Greiner’s (1998) model, the Five Stages of Organizational Development clearly specifies the phases of growth through which an organization progresses: creativity, direction, delegation, coordination and collaboration. He created this descriptive framework to illustrate the phases of adaptation an organization transitions through as it integrates the initiative into the organization’s culture. Greiner (1998) asserted that “each phase begins with a period of evolution, to with steady growth and stability, and ends with a revolutionary period of substantial organizational turmoil and change” (p. 56). Greiner’s research emphasizes the organization progress forward toward a state of greater change acceptance as organizational leaders adjust a combination of strategic organizational practices to unfreeze the organization and encourage organizational members to climb to the next plateau. Figure 11 illustrates Greiner’s five sequential phases of organizational change and development: creativity, direction, delegation, coordination and collaboration.
Community colleges are entering an era in which they required useable management tools that enable them to make operational data-driven decision-making and assist them in educating their core administrative team in order to build their capabilities. Greiner’s model serves this purpose by offering a coherent frame of reference that details explicitly where the organization lies along the change continuum and outlines the options available to them to facilitate cultural transformation of the organization. Notably, Greiner’s model is specifically tailored for use with organizations, such as community colleges, that are undergoing revolutionary or radical strategic change and the model provides strategies for improving organizational performance.

An examination of the main points of the model reveals that Greiner described each sequential phase in a cultural context. The early phases describe an organization that is bureaucratic and centralized. In contrast, the latter phases describe an organization that is participative and collaborative similar to the learning organizations defined by Peter Senge in his book entitled *The Fifth discipline: The Art & Practice of the Learning Organization*. Senge (2006) argued that in today’s marketplace high performing or effective organizations have
cultures that were formed to become learning organizations. In his research he found that learning organizations performed best when decision were made in collaborative settings and were supported by intelligence derived directly from operating data.

The strength of Greiner’s model and the justification for its use in this study is that it provides a succinct framework for community college leaders to use to determine the current-state of their organizations as well as specific strategic tactics for moving their organizations forward toward greater collaboration. The participative culture represents a future-state that has been shown in literature to improve the operating effectiveness of organizations.

As community colleges continue to integrate business-centric techniques into their organizational matrix or culture, senior leadership will be tasked with the duties of change management and will need to establish an organizational climate suitable for sustaining organizational initiatives to enhance institutional effectiveness. Two key assumptions underlie this effort to engage the organization in a change initiative. The first assumption is that community college leaders can systematically assess the current organization climate with enough certainty to act. The second assumption is that organizational leaders will effectively communicate the rationale and urgency for change, if the climate is found to be unsupportive. It is important to be aware of these foundational assumptions because organizational change initiatives can terminate before they are fully diffuse throughout the institution if leaders fail to evaluate organizational readiness for change. In particular, community colleges offer unique challenges to change because the broad mission requires a diverse leadership corps consisting of representatives from academics, student affairs, adult education, faculty, financial, security and building and grounds. If change agents within the organization are unable to offer a rationale for change or do not establish a measureable timeline, the initiative could stall in the mist of
unending debates among the team of representatives or false starts. Thus, the integration of a successful change initiative will rely on community college leaders’ understanding of the sequential path of organizational development and the crucial function that organizational climate plays in the change process. To evaluate the organizational climate at the participating colleges Stinger’s Organizational Climate Model was employed as an additional lens for this study.

**Stringer’s Organizational Climate Model**

In *Leadership and Organizational Climate: The Cloud Chamber Effect*, Robert Stringer (2002), an organizational theorist, posit that organizational climate is the central point of leverage in creating strategic change within an organization. Organizational climate is a distinct concept and is not synonymous with organizational culture. In organizational development literature, organizational culture represents a fluid living system that simultaneously blends ideation (the individual’s ideas and thoughts) with the social-cultural links that occur with members of a group. Whether alluding to the individual or the group, culture directs how individuals interact, and respond to stimuli within the environment. When referring to an organization, the literature postulates that culture is temporal, suggesting its meaning can change as a result of the time period organization passes through (Masland, 1985; Allaire & Firshtrotu, 1984; Smart & Hamm, 1992; Denison & Mishra, 1995, Alvesson, 2003; Smart, 2003; Huisman & Currie, 2004). In essence, culture is adaptive and it will adjust as social beliefs, norms and values evolve. Because of its embedding, organizational culture drives individual’s cognitions and group dynamics which translate directly into organizational performance and effectiveness.

Organizational climate represents the atmosphere in which the organization’s employees must work, and it has a persuasive influence on the social interactions that occur between
individuals and groups. Especially during periods of organizational change, the atmosphere created by organizational climate can either lead organizational members to conform to new roles and responsibilities resulting from the change or find them intractably committed to past practices and behaviors. Stringer believed that organizational leadership serves a vital role in overcoming barriers or resistance to change. In their role, organizational leaders must create and direct the motivational energy needed to establish an organizational climate that is accepting of the change phenomena. Stringer’s (2002) framework dovetails nicely with earlier discussions regarding the research of Levin (2001). In both cases, the research produced by each scholar emphasized the linkage between the external environment and the internal socio-cultural environment of the organization. Stringer’s (2002) research extended earlier findings to include the impact of leadership on organizational behavior and expounded on the important linkage organizational culture has on individual and group behaviors. According to Stringer (2002),

organizational climate is a relatively enduring quality of the internal environment of an organization that (a) is experienced by its members, (b) influences their behavior, and (c) can be described in terms of the values of a particular set of characteristics (or attributes) of the organization” (p. 8).

Organizational climate arouses motivation and thus directly impacts organizational performance, because it is more accessible than organizational culture. By adjusting various levers within the organization; such as, leadership practices, organizational structure, resource support, and rewards academic leaders can build the level of commitment from organizational members to support innovation and diffuse its effects throughout all departments of the institution. Figure 12 displays the six levers used to illustrate a configuration of organizational climate. Identifying these levers is important to community college administrative leaders because administrators are often faced with external forces that can shift the internal environment of the college and limit the productivity of employees, and thus the organization.
By developing remedies that are aligned with one or more of the levers, organizational leaders can create an environment that is supportive of organizational members as they transition to incorporate new work processes.

Figure 12. Stringer’s Organizational Climate Levers

Adapted from Stringer, R. (2002) *Leadership and Organizational Climate*. Copyright 2002 by Pearson Education Inc... Shows the link between organizational climate and culture to organizational performance.

Achieving the right balance between individual and group performance is the primary objective of the senior leadership team as they work toward improving operational effectiveness and efficiency. The Stringer (2002) model specifically targets the variables that will produce a favorable climate to sustain organizational innovations; however, the model treats all organizations similarly. In order to specifically apply it to community colleges, the organizational culture specific to these institutions must be defined.
Organizational Culture and the Community College.

Community colleges have a dynamic culture that is reflective of the multiple functions these institutions perform for their diverse stakeholders. Culture is deeply embedded within any and all organizations and it manifests as one of the drivers of behavior. Because culture is a culmination of norms, values and beliefs, changing a community college’s organizational culture can be difficult as the needs of constituents change or as external forces impinge on the organization, the institution is required to respond with new program or services. The definition of organizational culture can be wide-ranging; consequently, deliberate effort was taken for this study to narrow the definition through the use of known research. To accomplish this task numerous disciplinary publications from the fields of strategic planning, business policy, management theory, organizational theory, and organizational development were examined (Masland, 1985; Allaire and Firsirotu, 1984; Smart & Hamm, 1992; Denison & Mishra, 1995; Alvesson, 2003; Smart, 2003).

Most authors and researchers characterize organizational culture as a social system equipped with socialization processes. According to Brown and VanWagoner (1999),

Organizations are a microcosm of the larger society in which they are situated in that they to possess a culture, structure, patterns of interaction, and people. As a sense maker, an organization’s culture profoundly influences member’s understandings of organizational life by providing webs of meaning (p. 3).

McGrath and Tobia (2008) expand on Brown and VanWagoner (1999) beliefs and commented that organizational culture is a powerful though subtle and largely invisible force in the lives of students, staff, and administrators. To manage organizational culture properly, it needs to be acknowledged and its features surfaced, mapped, and understood. Organizational culture is the invisible glue that holds an institution together by providing shared interpretations and understandings of events through socializing members into common patterns of perception, thought, and feeling (p. 43).
In a community college environment, a collective organizational culture is formed by the multi-faceted mission that is broad in content and includes traditional academic goals found in institutions of higher education, as well as learning objectives found in organizations that provide career programs and technical training. Beyond the traditional collegiate and vocational purposes, the institution provides a bridge for a diverse population of students with varied academic backgrounds and aspirations requiring a community of staff and faculty with extensive professional backgrounds. Often, various departments must compete for resources yet fulfill the obligation to deliver academic services across multiple departmental academic units, including career technical education (CTE), continuing education (CE), transfer (general education), community services, and developmental and remedial education. Forming linkages among these traditional community college silos is necessary, but can be difficult to cultivate because each silo possesses its own cultural traits. Yet, forming a unifying linkage among these college silos in turn, changes the organizational culture into a high performance organization that focuses its efforts on its mission. According to McGrath and Tobia (2008), “many organizational theorists have argued, a strong and well-articulated culture is a vital component for high performing institutions because it provides a sense of identity, clarity of mission, and focus to decisions, strategies and practices” (p. 44).

So, despite of the presence of these sub-cultures, differences must be bridged and the groups must be encouraged by senior administrators to coalesce around a set of common indicators that demonstrate the performance of the institution. In essence, a policy or emphasis towards centrality should be promoted by senior leadership within the community college in order to achieve a unified approach to readying the organization for change. In today’s
environment, community colleges must be able to incorporate institutional effectiveness principles and strong accountability skills. Creating a culture of accountability sustains or raises the quality of performance within the organization by forcing organizational members to examine their organizations critically and to subject them to critical review internally and externally (Huisman & Currie, 2004).

The cumulative research specific to the types of cultures types found within community colleges have coalesced around the research of several scholars (Tierney, 1988; Smart, Kuh and Tierney, 1996; Cameron & Smart, 1998; Smart, 2003; Cameron, 2009). Each of these studies has referenced the use of the Competing Values Framework to diagnose the organizational culture types present in community colleges. The results from the studies confirmed and expanded earlier research on the relative influence of factors in the external environment, institutional culture, internal decisions and managerial approaches on the organizational effectiveness of postsecondary institutions.

The Competing Values Framework (CVF) is a two-dimensional organizational framework that distinguishes between the culture types and decisional approaches Schein (1992) conceived of the model that was used by researchers as a tool to analyze an organization’s culture as it experience systemic organizational change. The CVF model was later redesigned to its present form by other researchers (Detert, Schroeder & Mauriel, 2000; Cameron & Quinn, 2006). In 1999, Cameron and Quinn in their book entitled *Diagnosing and Changing Organizational Culture* described how they tailored the CVF to be used to evaluate the cultures found in any organization, which could include higher education institutions such as community colleges. The model depicts four culture types (Clan, Adhocracy, Hierarchy and Market) and explicitly connected these types to specific leadership and effectiveness styles. The elements
utilized to describe the leadership and effectiveness styles in the CVF parallel the categories used in Greiner’s model and this made the Competing Values Framework suitable for use in this study. Findings from the earlier studies, using the CVF, reported that community colleges displaying either a Clan or Adhocracy produced a favorable climate for innovation and a commitment to produce effectiveness (Cameron & Quinn, 2006). This means that college leaders who facilitated the growth of a collaborative environment in their institutions found that organizational change was easier to accomplish. Community colleges that displayed an orientation toward Hierarchy and Market tended to be more controlling and incremental in their approach to pursuing institutional effectiveness (Cameron & Quinn, 2006).

The use of this culture model in this study was limited to characterization of cultural types and the leadership types. The CVF included descriptive characteristics for the cultural and leadership types. These characteristics were a priori themes that were mapped to the transcripts, and responses matching these themes were coded and classified. The culture types were used to create an illustrative profile of the cultural environments of each of the participating colleges.
Summary

The literature review discussed the importance of the globalization movement in reshaping the higher education landscape and driving organizational change across all sectors of the education community. Four principle forces: economics, politics, technology and culture, have refocused external interactions between community colleges and their constituents, as well as internal organizational functionality. Societal changes have led to a call for greater accountability and newer accreditation standards for assessing compliance with mission-objectives.

To achieve these new compliance objectives and emerge as institutions committed to greater accountability, community college administrators, faculty and staff were forced to become proficient in the use of performance data to communicate knowledge about organizational health. Community college leaders have been charged by institutional stakeholders to serve as change champions to overcome any initial inertia and improve readiness among employees to embrace the development of continuous quality improvement activities for the organization. During this organizational development phase, senior leadership plays an important role in building ties between departments and forging strong inter-disciplinary relationships. The end result is the establishment of a supportive organizational climate in which members will adopt a culture of evidence. As the organization assumes this new climate, employees will become more capable of developing verifiable measures, conducting data interpretation and communicating findings that support administrators in their efforts to enhance institutional effectiveness.

For this study, the driving questions served as guidance for the data collection as well as the analysis phase. To assist with the analysis of data, three principal lens were a priori themes:
leadership, organizational climate and knowledge management which incorporates data-driven decision-making. Each of these themes is critical for understanding how an organization evolves to utilize data to make crucial decisions, and consequently establishes processes for enhancing overall institutional effectiveness. To search for convergence among the multiple and varied sources of data, data triangulation was employed to identify occurrences supporting the \textit{a priori} themes as well as capture all other emergent themes.
Chapter 3 – Research Design And Methodology

Introduction

The methodology chapter details the research design and criteria that served as the foundation for the inquiry. The study’s purpose was to identify the data-driven decision-making processes and procedures utilized by community colleges to enhance institutional effectiveness. Chapter 3 begins with an overview of the qualitative paradigm and a justification for its application as the preferred research framework for this study. This discussion is followed by an explanation of the: (a) the case methodology; (b) site and participant selection protocol; (c) data collection and management; (d) data coding and analysis; (e) trustworthiness, validity, and rigor of the research; (g) limitations of the study; and (h) the researcher as the tool.

Qualitative Paradigm

The qualitative paradigm is grounded in three foundational social science related philosophies. These philosophies are identified in literature as “ontology, epistemology and methodology” (Denzin and Lincoln, 2000, p. 19). These philosophies form the core beliefs of the qualitative research practitioner which are revealed through the careful and deliberate selection of research participants, disclosure of the researcher’s possible biases that could inform the interpretations of the data; and in the presentation of the detail accounting of the research methodology used to conduct the research. By embracing these philosophies, the qualitative researcher reports on how a specific phenomenon has impacted individuals from their perspectives, and most importantly within the context of their experiences.

Qualitative studies are based on a purposeful design. According to Miles & Huberman (1994) “main task of qualitative studies are to explicate the ways people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations”
In addition, these studies are also fundamentally interpretive inquiries where the researcher reflects on his or her role, the role of the reader, and the role of the participants in shaping the study (Creswell, 2007). Each qualitative study is conducted within a clearly identified theoretical framework that guides data analysis and enables the researcher to contrast, compare, analyze and observe emergent patterns within multiple data sources. This approach results in a rich contextual description of the participant’s perception of an event under study.

Several leading scholars have identified the key elements found in qualitative research. To summarize some of the core elements or characteristics that define the qualitative paradigm, several commentaries have been summarized in Table 1.
Table 1.

Commentaries From Leading Scholars Regarding Qualitative Paradigm

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<tr>
<td>Natural Setting</td>
<td>Natural Setting (field focused), a source of data for close collection</td>
<td>Natural Setting; locates observer in the participant’s world</td>
<td>Study behavior in natural environments. Study the context in which behavior occurs</td>
<td>Research is conducted through an intense and/or prolonged contact with a “field” or “life situation”</td>
</tr>
<tr>
<td>Researcher’s Role</td>
<td>Researcher as key instrument of data collection</td>
<td>The researcher speaks from a particular class, gender, racial, cultural and ethnic community perspective</td>
<td>Researchers study behavior naturalistically and holistically to understand people’s experiences and to express their perspectives</td>
<td>To gain a “holistic” (systemic, encompassing, integrated) overview of the context under study, its explicit and implicit rules.</td>
</tr>
<tr>
<td>Data sources</td>
<td>Multiple data sources in words and images</td>
<td>Collect qualitative data such as in-depth interviews, field notes, participant observation and open ended questions</td>
<td>Captures data on the perceptions of local actors from inside, through the process of deep attentiveness, of empathetic understanding</td>
<td></td>
</tr>
<tr>
<td>Analysis Methodology</td>
<td>Analysis of data inductively, recursively, interactively</td>
<td>Emphasis on processes and meanings that are not experimentally examined measured</td>
<td>Search for patterns, themes and holistic features</td>
<td>Isolate certain themes and expressions that be viewed with informants, but that are maintain in their original form throughout the study.</td>
</tr>
<tr>
<td>Focus of inquiry</td>
<td>Focus on participants’ perspectives. Their meanings, their subjective views</td>
<td>Stresses the socially constructed nature of reality, the intimate relationship between the researcher and what is being studied</td>
<td>Wide-angle and “deep-angle” lens, examining the breath and depth of phenomena to learn more about them</td>
<td>Interpretive approach seeking deep understanding, an empathy or indwelling with the subject of the researcher’s inquiry</td>
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The qualitative paradigm encourages a comprehensive examination of the nature of reality experienced by the participants. Moreover, the paradigm has flexible guidelines that permit customization across all phases of the research study (research design, data collection, and data analysis), so that the researcher can take a holistic and situated approach toward addressing the study’s purpose. Furthermore, the paradigm incorporates the researcher’s skills and experiences, theoretical assumptions and participant perspectives to create a rich and detailed narrative.

Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, natural practices that make the world visible. The practices transform the world. They turn the world into a series of representations, including field notes, and memos to self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that the qualitative researcher study things in their natural settings, attempting to make sense of or to interpret phenomena in terms of the meanings people bring to them. (Denzin, 2000, p. 3).

Qualitative research is typically undertaken when little is known about the topic or when the objective of the study is to document the insights of those impacted by a phenomenon. Catherine Marshall, Professor of Education at the University of North Carolina at Chapel Hill and Gretchen Rossman Professor at the University of Massachusetts at Amherst (2006) noted that the focus for the qualitative researcher is on the observed phenomenon. They explain that the qualitative researcher begins with interesting, curious, or anomalous phenomenon that he observes, discovers, or stumbles across…and like a lead investigator uses research to explain, describe, explore or critique.” (p. 24). Norman K. Denzin and Yvonna S. Lincoln (2000) expanded on these authors’ definitions by offering a rich description of the qualitative approach stating that “qualitative research is a situated activity (occurring in a natural setting familiar to the research participant) that locates the observer in the world. It consists of a set of interpretive, material practices that attempts to …make sense of phenomena in terms of meanings people
bring to them” (p. 3). Jerry W. Willis (2007), Professor from Louisiana State University, describes the interpretive paradigm as an approach that “gathers and analyzes thick data sources…with a focus on understanding the intricacies of a particular situation, setting, organizations, culture, or individual.” (p. 243). The qualitative researcher uses multiple data collection strategies (interviewing, document analysis, field observations), in order to understand how social experience is created and given meaning. As a consequence, the qualitative study produces findings that reflect the “actor’s perspective” and provide rich descriptions of the events as experienced by the study’s participants (Denzin & Lincoln, 2000, p. 10).

Marshall and Rossman (1999) developed a typology that details the strength of the qualitative method for studies of this nature that require the examination of anecdotal evidence and written documents to describe the perspectives of the research participants. Table 2 shows the strengths of the qualitative methodology and the characteristics of this study which align to the methodology’s strengths. With this study’s emphasis on examining organizational response to a change initiative, the qualitative paradigm and case study methodology were best suited for this study.
Table 2.

Strengths of Qualitative Methodology and Research Study Characteristics

<table>
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<th>Qualitative Methodology Strengths</th>
<th>Research Study Characteristics</th>
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<tr>
<td>Research that delves in depth into complexities and processes</td>
<td>Inquiry will examine which processes and practices the selected colleges use to implement a data-driven decision making strategy</td>
</tr>
<tr>
<td>Research on little-known phenomena or innovative systems</td>
<td>Limited research examining change management issues for community colleges implementing a data-driven decision making strategy</td>
</tr>
<tr>
<td>Research that seeks to explore where and why policy and local knowledge and practice are at odds</td>
<td>Study will identify challenges to the implementation of the new strategy</td>
</tr>
<tr>
<td>Research on informal and unstructured linkages and processes in organizations</td>
<td>Study will assess the linkage between organizational culture and the implementation of new strategy</td>
</tr>
<tr>
<td>Research on real, as opposed to stated, organizational goals</td>
<td>Study will be situated within the selected colleges and interviews will be with those responsible for the implementation of the strategy</td>
</tr>
<tr>
<td>Research that cannot be done experimentally for practical or ethical reasons</td>
<td>Use of objective data alone will not fully explain the phenomena and in depth inquiry is required to capture the perspectives of the participants</td>
</tr>
<tr>
<td>Research for which relevant variables have yet to be identified</td>
<td>Study will provide new knowledge to the body of research regarding management strategies within community colleges</td>
</tr>
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Note: Highlights specific strengths of the qualitative inquiry and describes the research design approaches that will incorporate the listed strength.
Interpretive Paradigm.

Fundamentally, interpretive inquiries compare, contrast, and analyze data derived from several sources of evidence (i.e. interviews, documents, archival records and field observations) and include the reflective observations of the practitioner to better understand the nature of reality from the perspective of the participants. This qualitative study is not an exception and followed the core tenets of interpretive qualitative research. Data were collected from interviews from key decision makers involved with the organizational change initiative, field notes, and archival records. These pieces of data were examined as part of the interpretive phase of the study and coded into conceptual categories to illustrate support of or challenge to theoretical assumptions or a priori themes. As a consequence, thick narratives of the findings were developed which lead to final conclusions and implications. As an interpretive study, data gathering and interpretation is a required step of the qualitative research process and it generates thick descriptions that provide readers with a detailed understanding of the research environment and the participant’s viewpoints. Willis (2007) concurs that,

“...thick descriptions does more than record what a person is doing. It goes beyond mere fact and surface appearances. It provides detail, context emotion, and the webs of social relationships that join persons to one another. Thick descriptions evoke emotionally and self-feelings. It inserts history into experience. It establishes the significance of an experience, or sequence of events, for the person or persons in question. In thick descriptions individuals are heard (Denzin and Lincoln, 1989, p. 83).

“The focus of the interpretive paradigm is on understanding of the intricacies of a particular situation, setting, organizations, culture, or individual, but that local understanding may [also] be related to prevailing theories or models” (Willis, 2007, p. 243). Qualitative research is recursive or iterative in its design and incorporates the philosophy that data collection, data analysis, and interpretation occur throughout the study and influence each other.
Case Study Methodology

John Creswell (2007), Professor at the University of Nebraska at Lincoln, noted that the qualitative paradigm is a flexible design that can incorporate multiple approaches of inquiry such as narrative, phenomenological, grounded theory, ethnographic, and case study research. Of the stated choices, “the case study strategy of inquiry is the most often used approach for conducting qualitative research” (Stake, 2000, p. 435). Yin (2003) cites that the case study is the “preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context” (p. 1). Moreover, Yin (2003) describes the case study approach as an empirical inquiry that:

- investigates a contemporary phenomenon within its real-life context; especially when boundaries between phenomenon and context are not clearly evident;
- copes with the technically distinctive situation in which there will be many more variables of interest than data points; and
- relies on multiple sources of evidence, (so multiple data sources) with data needing to converge in a triangulating fashion.

(PP 13-14)

Stake (2000) in general concurs with Yin and suggests that the major conceptual responsibilities of the qualitative case researcher are to:

- select phenomena, themes or issues to be explored by the research questions;
- seek patterns of data to develop the issues;
- triangulate key observations and bases for interpretation;
- select alternative interpretations to pursue; and
- develop assertions or generalizations regarding the case. (P 443).

Case studies follow a defined structure of investigation, identifying a unit of analysis (a bounded system) around a phenomenon that little is known about and generates an end-product that provides the reader with insights of a contemporary event. “Qualitative researchers usually
work with small samples of people nested in their context and studied in-depth” (Miles and Huberman, 1994, p. 27), thus the sampling is purposeful and in particular, for a case study, it is bounded. “The boundary defines the aspects of the case within the limits of time and means and is directly connected to the research questions” (Miles and Huberman, 1994, p. 27).

The boundary established for this case study consisted of several elements: the purpose, geography, criterion of tenure in position, institutional size, AQIP membership and experience working with the Higher Learning Commission’s Criterion 7 for accreditation for over three years. This study did not investigate the decision-making practices at the departmental level, but focus the inquiry at the organizational level with particular emphasis on organizational structure, processes and organizational culture and climate.

Case study methodology is used in many situations to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena (Yin, 2003). “Colleges and universities represent a distinctive type of organization, and it is to this distinctiveness that we most often attribute our lack of rational measures of institutional accountability and effectiveness” (O’Neil, Bensimon, Diamond & Moore, 1999, p. 1). Within these organizations O’ Neil et al. (1999) argue that the extraordinary amount of autonomy and professional discretion enjoyed by faculty, decision-making by compromise and bargaining, and the limits on administrator’s formal authority can promote challenges to the strategic planning process and conflict with external demands for greater financial accountability imposed by state legislatures. Also, the bias toward autonomy may limit the effectiveness of implementing data-driven decision-making practices within a community college setting, because the approach requires the sharing of data across departmental boundaries and agreement on the use of common measures of institutional performance. Consequently, strategies would have to be considered by
the senior administrative team to overcome implied or actual barriers to the full implementation of an evidence based decision approach. Implementing a transformative or strategic organizational change, such as data-driven decision-making within a higher education environment, requires a strong commitment from the senior leadership to lead the transition and develop strategies for reaching a level of effectiveness that achieves program and student outcomes.

In summary, the findings of the study will reveal new understanding regarding processes and procedures that can be employed to improve the use of program, financial and operational data to enhance decision-making and institutional effectiveness. The application of the case study methodology supports the study’s purpose and because the methodology is well suited for investigating a contemporary phenomenon within its real-life context the study will produce findings that are relevant to the selected community colleges (Yin, 2003).

The case study approach is ideal for understanding the current-state of the organization’s preparedness for change from the perspective of the actual parties that are affected by the change and the possible strategies for moving the college forward toward achieving the goals stated within their missions.

**Site and Participant Selection.**

The works of Creswell (2007) and Merriam (1998) provided reference points for the most essential elements and critical choices made to construct the research design used for this study. Accordingly, the study was organized into three sequential phases, each representing a step in the research process Figure 13. As is characteristic of a qualitative research inquiry, the paradigm encourages continuous review of data which allows for discovery of new themes and further
interpretations of the data. The cyclical nature of the qualitative study is captured in the diagram with the placement of arrows labeled *Capture and Analyze Data* and *Revised Data*.

Figure 13.

Data Collection Methods and Analysis Process

Figure 13 Research design map illustrates the iterative sequential phases of the research study. Adapted from “Handling Qualitative Data: a Practical Guide”, by Lyn Richards, p. 7.
Phase 1 Initiation and fieldwork.

Sampling strategy.

An electronic database, managed by the Higher Learning Commission, consisting of nearly two hundred two- and four-year colleges was used as the principal sample pool from which the sites used in this study were selected. Qualitative inquiries can utilize one or more strategies to identify relevant sites and participants to enhance the validity and credibility of the study. Three community college sites fulfilling a specific set of criteria were selected for this study using a specific sample selection process. The sample selection process has a profound effect on the ultimate assessment of the quality of the research findings. At the core of the process is the identification of a representative sample of interest to which conclusions can be drawn from the study’s findings. For this study, several sampling strategies and several criteria filters were employed to reduce the available sample pool to three sites. The sampling strategies consisted of: purposeful sampling, random sort and maximum variation.

Creswell (2007) suggested that purposeful sampling is a vital component of qualitative research. Purposeful sampling means that participants and sites are deliberately selected for the study because they can inform understanding and provide a perspective addressing the research purpose. Sharan Merriam (1998), professor from University of Georgia, reported a similar conclusion regarding purposeful sampling. She argued that “purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned” (p. 61). According to Creswell (2007), “an inquirer selects individuals and sites for study because they can purposefully inform an understanding of the central phenomenon in the study”. For this study, the inquiry selected participants that held different positions along the hierarchical ladder within each college,
beginning at the faculty level and moving upward to include individuals holding the title of Academic Dean and Vice President. Capturing data at all three levels of the organization was an essential element of the study, because the perceptions held by the participants regarding the status of integration of data-driven decision-making practices within the organization may vary by position, responsibility and involvement in the support of the initiative. Consequently, capturing these points-of-view will ultimately inform the formulation of the study’s conclusions and recommendations.

The second sampling technique deployed was random sort. Purposeful sampling utilizing a random sort process ensures each member of the population has an equal chance of being selected and consequently, “the researcher can assume that the characteristics of the sample approximate the characteristics of the total population” (Leedy & Ormond, 2010, p. 205). A secondary benefit of random sort is that it improves external validity to the extent to which conclusions drawn can be transferred to other contexts or situations.

The third and final sampling strategy was maximum variation. Maximum variation sampling, also known as maximum diversity sample or a maximum heterogeneity sample, is ideal for studies involving small samples. Patton (1990) addressed the value of using maximum variation when the sample size is small. He stated that this strategy aims at capturing and describing the central themes or principal outcomes that cut across a great deal of participant or program variation. For small samples a great deal of heterogeneity can be a problem because individual cases are so different from each other. The maximum variation sampling strategy turns that apparent weakness into a strength by applying the following logic: Any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared aspects or impacts of a program (p. 172).

Supporting Patton (1990)’s claims, Hoepfl (1997) argued that “maximum variation sampling can yield detailed descriptions of each case, in addition to identifying shared patterns that cut across
cases” (p. 52). For instance, the study revealed best practices currently used by community colleges in the study to promote the concept of data-driven decision-making throughout their colleges. These findings could be relevant to other institutions seeking to achieve organizational change by pursuing a similar management strategy.

*Site selection.*

Six criteria filters were used to differentiate and reduce the list of colleges available on Higher Learning Commission website. The filters used were degree granted, campus type, location, tenure of Academic Quality Improvement Program (AQIP) membership, documented commitment to institutional effectiveness and institution size. These filters and their descriptions are summarized in Table 3.

<table>
<thead>
<tr>
<th>Table 3. Summary of Site Selection Criteria</th>
</tr>
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<tbody>
<tr>
<td><strong>Item</strong></td>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td>3</td>
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<td>4</td>
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<td>5</td>
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<tr>
<td>6</td>
</tr>
</tbody>
</table>
Criterion 1 and 2: Degree granted and campus type.

The Higher Learning Commission’s accreditation database included both two-year and four-year institutions. The purpose of this study was to interview only two-year community colleges that grant Associate Degrees. Consequently, all four-year colleges were eliminated from consideration. Further, of the remaining community colleges, only those colleges that operated as single campus locations were selected as eligible colleges for further consideration. The focus on single campus institutions was done, because the intent of the study was to examine and document the processes and procedures used by individual colleges as they integrated data-driven decision-making practices into their organizations, as well as record the challenges that have arisen as a result of their efforts. Therefore, community college systems were not eligible for this study.

Criterion 3: Location.

There are six regional higher education accrediting associations in the United States. One of these associations is the North Central Association (NCA). The NCA oversees the accreditation process of member colleges located in the middle and mid-west region of the United States which encompasses the states of Arizona, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, West Virginia, Wisconsin, and Wyoming. It was decided to limit site selection to this region as it is: (1) the largest of the six accrediting regions; (2) had the greatest number of community colleges; (3) and offered the greatest variety of community college sites to select from.
Figure 14 shows the results of a national study conducted by the American Association of Community Colleges (AACC) in which they reported that medium, large and extra large two-year colleges represented 41%, 17% and 15% of all community college enrollments respectively. Notably, the medium, large and extra-large colleges represented a clear majority totaling 73% of all community colleges. Thus, it was decided that the study would mirror these findings and community colleges targeted for this study would represent colleges meeting the medium, large and extra-large size categories.

Figure 14. Size of Community Colleges by Enrollment, Fall 2002

Adapted from the national Profile of Community Colleges: Trends & Statistics, 4th ed., p. 16, Copyright 2005 by the Community College Press. The table illustrates that most colleges are medium, large and very large.
Criterion 4: Tenure of AQIP membership.

The community colleges selected for participation in this study had to have active memberships in the Higher Learning Commission’s Academic Quality Improvement Program (AQIP) for a minimum of three years. The objective of AQIP is to infuse the principles and benefits of continuous improvement into the cultures of colleges and universities in order to assure and advance the quality of program and student learning outcomes. As a requirement of their participation, these institutions agree to adapt business management practices, such as structured goal setting, strategic planning, total quality management, and organizational accountability to guide overall planning and operational activities. The execution of these activities creates an organizational climate that is suitable for data-driven decision-making to occur. The Academic Quality Improvement Program (AQIP) is a comprehensive program that requires colleges to undergo significant organizational change and to guide their transition the Higher Learning Commission has established nine AQIP Criteria. Table 4 lists the nine criteria in the Academic Quality Improvement Program (AQIP).

Table 4.

Higher Learning Commission’s AQIP Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criterion One</strong></td>
<td>Helping Students Learned</td>
</tr>
<tr>
<td><strong>Criterion Two</strong></td>
<td>Accomplishing Other Distinctive Objectives</td>
</tr>
<tr>
<td><strong>Criterion Three</strong></td>
<td>Understanding Students’ and Other Stakeholders’ Needs</td>
</tr>
<tr>
<td><strong>Criterion Four</strong></td>
<td>Valuing People</td>
</tr>
</tbody>
</table>


**Criterion Five**  
Leading and Communicating  
Addresses how leadership and communication structures, networks, and processes guide the organization in making decisions and setting directions

**Criterion Six**  
Supporting Institutional Operations  
Addresses the support processes that help provide an environment in which learning can thrive

**Criterion Seven**  
Measuring Effectiveness  
Examines how the organization collects, analyzes, and uses information to manage itself and to drive performance improvement

**Criterion Eight**  
Planning Continuous Improvement  
Examines the planning processes, strategies and actions to achieve the mission and vision

**Criterion Nine**  
Building Collaborative Relationships  
Examines the organization’s relationships to analyze how they contribute to accomplishing the mission

Note: Adapted from the Higher Learning Commission’s website [http://www.hlcommission.org/aqip-home/](http://www.hlcommission.org/aqip-home/). Lists the nine Academic Quality Improvement Program Criterion used by member colleges to satisfy the Higher Learning Commission’s accreditation requirements.

The nine AQIP Criteria are extensive and require commitment from across the institution; consequently, community colleges joining the AQIP require some time to educate and train their academic transition teams and implement the tasks set forth by the Higher Learning Commission. Accounting for time needed to initiate and become functional under the AQIP plan, only schools with membership tenor greater than or equal to three years were added to the eligibility pool.

**Criterion 5: AQIP Criteria Seven.**

Data-driven decision making is a concept and an operating philosophy that when implemented empowers senior administrators, unit-level administrators and faculty to assess the operational performance of their colleges by identifying common measures and evaluating these
measures against pre-determined standards. The results of the analysis are used to inform future strategic and operational decisions that will influence how the community college will meet required program and student learning outcomes. Within the AQIP, Criterion Seven specifically addresses the area of data management (identification, collection, validation, and reporting) and its relationship to institutional effectiveness. Those community colleges engaged in complying with Criterion Seven, are committed to developing strategies and measures to establish a culture of evidence, and thus become institutions that fully utilize data-driven decision-making practices to achieve their required outcomes. However, not all institutions are equally advanced in AQIP Criterion Seven. To address this concern, a subject matter expert at the Higher Learning Commission was consulted to identify those institutions that have demonstrated experience with Criterion Seven.

*Criterion 6: Institution size.*

The final selection criteria used for site section was the Carnegie Classifications of Institutions of Higher Education (Carnegie Classifications). The Carnegie Classifications were developed by the Carnegie Commission on Higher Education to provide descriptive data on colleges and universities including by degree granted and size. The size of the academic institution is reflective of the complexity of the institutional infrastructure, culture and resources. Combining information from the Carnegie Classifications with supplemental data from the Higher Learning Commission, a consolidated database was created (Figure 15).
Determination of final sample size.

As a guiding principle for determining a recommended sample size for the study, Creswell (2007) recommends that for case study research, “an inquiry should include no more than 4 to 5 cases in a single study. He believed this number would provide ample opportunity to identify themes of the cases” (p. 128). After applying the selection criteria filters there were 52
colleges in the eligibility pool. Applying maximum variation, the eligibility pool was reduced to a total of 24 community colleges. The maximum variation sampling procedure was followed by an initial random number selection process to the count to eight colleges. A potential candidate list showing the size and location of the eight community colleges is shown in Table 5.

Table 5.

Candidate List of Colleges by Size and Location

<table>
<thead>
<tr>
<th>College</th>
<th>Carnegie Classification (Size)</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium</td>
<td>Iowa</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
<td>Illinois</td>
</tr>
<tr>
<td>3</td>
<td>Large</td>
<td>Illinois</td>
</tr>
<tr>
<td>4</td>
<td>Large</td>
<td>Iowa</td>
</tr>
<tr>
<td>5</td>
<td>Large</td>
<td>Michigan</td>
</tr>
<tr>
<td>6</td>
<td>Extra-Large</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>7</td>
<td>Extra-Large</td>
<td>Iowa</td>
</tr>
<tr>
<td>8</td>
<td>Extra-Large</td>
<td>Michigan</td>
</tr>
</tbody>
</table>

The candidate list was used as the source document to select the sites for the study. The random number process was used a second time to select a medium, large and extra-large school from the list of eight colleges. The three colleges were contacted by letter to solicit their participation.

**Recruit Participants.**

The study was designed to explore the following points of interest: (a) learn how the colleges selected the measures used to appraise institutional effectiveness; (b) identify the processes and procedures implemented to integrated the use of data to support operating decisions; and (c) explain how the organizational climate and culture have benefitted or hindered the transition to data-driven decision-making environment. To arrive at answers to these
inquirers, participants were selected that occupied positions of faculty, dean and academic president.

Research literature in the field of organizational development promote a consensus view that there are specific strategies required to successfully implement strategic change initiatives within complex organizations; such as community colleges. These scholars suggested that these organizations while managing strategic change must: engage in information dissemination and evaluation, create a climate for change, build relationships strong enough to elicit cooperation, compliance and teamwork across internal departmental boundaries and include supportive relationships with the key sources of power needed to implement the strategy. Summarizing their ideas, these scholars point out those colleges implementing strategic initiatives, similar to data-driven decision-making, must build a strong implementation network composed of individuals throughout the organization who have the capabilities to drive implementation.

Given that this study is assessing the results of a strategic initiative, it was important to capture the voices of the key constituents within the community college across departmental or unit levels (senior administrators, unit-level administrators and faculty) to record their views regarding the pace and the status of the initiative.

Participants selected for the study were identified by seniority and job title. Participants selected had to have at least one year of experience in their current position to ensure that they possessed: (1) an understanding of the interpersonal dynamics that existed within the organization, (2) cultural influences and management procedures, and (3) business practices that existed within their institutions. Examples of the titles held by the participants were: the Vice President of Academics, Dean of Academics and the Faculty Council President. Further, as a part of their job responsibilities, these participants also had to serve on either their internal AQIP
planning or assessment teams for their respective campuses. These positions were selected because their role within the college afforded them the opportunity to witness and/or construct key decisions that could influence organizational structure and integration activities needed to support a management philosophy based on evidence-based decision-making. Further, they would be in a position to comment on the evolutionary and revolutionary organizational structural or procedural changes that have occurred over time within the college to establish measures for institutional effectiveness.

Initially the study design called for interviews with nine participants, three (3) from each college. Prior to the start of the scheduled interviews, the community college selected to represent the medium-size college declined to participate because of an unfilled vacancy in the position of Vice President of Academics. A replacement school was selected for the list of eight eligible colleges. The replacement school had only two people who could participate in the study, because the Vice President of Academics and Dean of Academics were combined due to campus size and budget. The school was accepted to the study, despite the issue, because the participant had extended experience with the college and had extensive work knowledge as a senior level administrator for the college to speak confidently about the data-driven decision-making initiative on campus. Therefore, eight participants were selected and agreed to be interviewed for the study.

**Interview Protocol.**

*Contact Protocol.*

A letter of introduction was sent to the Office of the President at each college recommended by the Higher Learning Commission. The letter was composed jointly by a member of the Higher Learning Commission and the researcher. The colleges were contacted within seven days of the receipt of the letter by telephone to confirm receipt and acceptance of
the invitation. The Office of President selected participants satisfying the study’s requirements. Each participant was screened by the researcher during a telephone conversation to confirm they met the selection criteria. Each participant was sent an electronic copy of the nine interview questions to their school’s electronic mail address one week prior to the interview date. Interviews were conducted in person on the respective campuses.

**Phase 2 Data collection and analysis.**

*Data collection.*

According to Creswell (2007), four basic types of information can be found in qualitative studies. These data elements are “observations (ranging from nonparticipant to participant), interviews (ranging from closed-ended to open-ended), documents (ranging from private to public), survey questionnaire, and audiovisual materials (photographs, compact disks and videotapes)” (p. 129). Audiovisual materials were not used in this study; however, semi-structure interviews, observations in the form of field notes, survey questionnaire, and internal and external source documents were used to gather information at the three sites.

During Phase 2, data was collected and prepared for analysis as shown in Figure 16. “The term data refers to the rough materials researchers collect from the world they are studying….Qualitative data are both evidence and the clues.” (Bogdan and Biklen, 1998, p.106). The multiple data sources used in this study included: face-to-face semi-structured interviews, a self-administered survey, field notes, and a collection of relevant documents from the colleges and the AQIP website. Yin (2003) stresses that the case study’s unique strength is found in its ability to deal with a full variety of evidence, such as documents, artifacts, interviews, and observations.
Figure 16. Data Collection Methods and Analysis Process

**Figure III.X** Research design map illustrates the iterative sequential phases of the research study. Adapted from “Handling Qualitative Data: a Practical Guide”, by Lyn Richards, 2006, p. 7.

*Semi-Structured Interviews.*

Creswell (2007) stressed that interviewing is not an isolated event, but actually consist of a series of steps. These steps are listed below:

1. Identify interviewees based on one of the purposeful sampling procedures
2. Select type of interview (telephone, focus group, or one-on-one)
3. Select method for recording proceedings
4. Design and use interview protocol
5. Pilot test interview questions to refine protocol
6. Select interview location
7. Obtain consent from the interviewee
8. Conduct interview

The steps outlined above were followed for this study. The type of interview selected for this study was an one-on-one interview with each participant, applying a semi-structured format. A key benefit of face-to-face interviews is that data can be collected in the participant’s natural setting and context. Denzin & Lincoln (2000) concurred that an engaged interaction between the researcher and participant creates “a deeper understanding of the phenomena under study” (p. 654). To encourage the exchange of information about events and people involved in the organizational change toward data-driven decision-making, an interview schedule was used (Appendix A). Conceived from the research purpose statement and driving questions, the interview schedule consisted of nine main questions. The interview questions were sent to all participants one week prior to the scheduled interview date in order for participants to review and prepare. At the start of each interview, the participants signed two consent forms (one they kept and one for the researcher’s files) agreeing to be a party to the study (Appendix B). The interviews were scheduled for one hour and on average were completed within the desired time-frame. The interview schedule established a needed consistent thread that tied each site and participant together. With each respondent answering “the same questions, the approach increased the comparability of responses” (Patton, 1990, p. 289). In support of the main questions, the researcher also elicited additional opinions from each interviewee by utilizing
probing questions to encourage continuation, elaboration or clarification of a particular comment, concept or theme. All responses were captured on two digital recorders. At the conclusion of the interview, each participant was informed that they would receive an electronic copy of their comments for review. Each interview was professionally transcribed and archived for analysis in the computerized database known as NVivo 8. All participants were given the opportunity to review and edit their comments to verify accuracy as part of a member check to enhance validity of the data collection method. The member checking was completed with no corrections made by the participants.

The comprehensiveness of the information obtained from participants can be less than optimal due to a variety of reasons. Often it is due to the interview process. Creswell (2007) describes these potential challenges as a result of: “(a) unexpected behaviors of the participants; …(b) the incorrect phrasing of questions by the researcher; (c) questions asked pertaining to sensitive issues; or (d) interviews which are poorly transcribed” (p. 140). Pilot interviews were conducted to ascertain whether the questions asked addressed Creswell’s challenges.

Pilot Study.

Prior to the start of the interviews at the community college sites, the interview questions and the interview process piloted. A local college fulfilling the requirements specified in the site and participant selection process was contacted and took part in the pilot study. The purpose of the pilot was to enhance the interview skills of the researcher and to validate the quality of the interview questions. The pilot college found that the questions elicited the appropriate information to address the purpose; thus, no changes were made to the interview questions. All of the pilot data was destroyed and none was used in the study.
Field Notes.

Supplementing the interview transcripts, were field observations or field notes. “[Field] observations are a major means of collecting data in qualitative research. It offers a firsthand account of the situation under study and, when combined with interviewing and document analysis, allows for a holistic interpretation of the phenomenon being investigated” (Merriam, 1998, p 111). Field notes are composed observations (descriptions) and reflections made by the researcher of specific elements of the interview as well as any stage in the data collection process. The content of the field notes in this study consisted of the: (1) sequence of activities proceeding and occurring during the interview; (2) detailed accounts of specific spatial characteristics of the interview space; (2) the tenor of the conversation and any non-verbal communication queues; and (4) early suppositions regarding possible findings. The field notes are part of the data collected and were analyzed as part of data triangulation along with the interview transcripts to gain additional insights and perspectives about the institutions being studied.

Survey Questionnaire.

Surveys provide access to primary data from individuals directly affected by the phenomenon under study. Key benefits of using a survey are “that they provide a quick, efficient and accurate means of assessing information about the characteristics [and perceptions] of participants” (Zikmund and Babin, 2010, p. 191). Demographic data provided a contextual framework with which to understand the study participants and assists with analysis of the findings. All researcher-generated documents, such as participants surveys, “can be treated as documents in support of the qualitative investigation” (Merriam, 1998, p. 119). The purpose of the survey was to gather information on the organizational culture and climate found on the
campuses of the community colleges selected for this study. The survey was prepared as an electronic Microsoft Word document (Appendix C). The surveys were sent electronically to each participant (within 48 hours following the face-to-face interview). The questions created for the survey were adapted from research, conducted by Denison (1996), on the influence of organizational culture on organizational change. His findings lead to the creation of an organizational model that assessed culture along four cultural traits (involvement, adaptability, mission and consistency (agreement with the mission) and measured their influence on organizational performance. Questions representing each trait were included. The survey was structured using a Likert Scale. Participants indicated their response to the question by checking how strongly they agreed or disagreed with the constructed statements. To enhance coding of the survey responses, data elements were scanned into the NVivo 8 database.

Documents.

Capturing information from all possible data sources created context for understanding the perceptions of the participants. Merriam (1998) stated that “documents of all types can help the researcher uncover meaning, develop understanding and discover insights relevant to the research problem” (p. 133). Documents are important additions to the permanent records of the study because they capture information at a particular time and within a specific context. In particular to case studies, “documents are used to corroborate and augment information from other sources” (Yin, 2003, p. 87). Documents possess several key strengths that make them ideal for supplementing information gathered from transcribed interviews. Often participants may have unintended gaps in recall due to the participant’s distance from the actual occurrence of the phenomenon under study and thus, documents contain details that can close these information gaps. According to Yin (2003), the strengths of documents are: “(1) stability (can be reviewed
repeatedly); (2) unobtrusive (not created as a result of the case study; (3) exact (contains exact names, references and details of events); and broad coverage (long span of time, many events and many settings)” (p. 86). Several types of documents were collected and assessed for this study; including internal progress reports (Systems Portfolio, and Reports of AQIP Action Projects) and HLC AQIP accreditation reports found on the Higher Learning Commission website. The Systems Portfolios describe the processes, results, and improvements achieved in each system (as described by the nine AQIP categories), as well as, evidence that the institution continues to meet The Higher Learning Commission's criteria for accreditation (Higher Learning Commission). Internal progress reports provided considerable insights into the practices, processes, and resources that have been used to support this change initiative. Further, these reports highlighted areas of success, areas of challenge and past metrics used to gauge institutional effectiveness throughout the institution.

Data Analysis

Case studies “require rich descriptions in order to gain sufficient information to check for trends, to rule out competing explanations and to corroborate findings” (Merriam, 1998, p. 29). The researcher used data source triangulation to uncover themes that arose from the collected data. Stake (2000) defined “triangulation as a process that uses multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation” (p. 443). Stake (2000) concluded that “a detailed description of the case emerges from the triangulation process in which the researcher creates a detailed account of the history of the case, chronology of events and key observations that inform findings” (p. 443).

The volume of data must be carefully organized by the researcher to protect the validity and trustworthiness of the findings. Creswell (2007) stressed that data analysis occurs as a
sequence of procedural steps beginning with data collection; followed by data management; reading and memoing; describing, classifying and interpreting; and representing and visualizing. He illustrated the steps, with the corresponding activities typically executed in each step, as a data analysis spiral graphically shown in Figure 17.

Figure 17. The Data Analysis Spiral

Shows the iterative data analysis process used in qualitative studies following the data collection phase. (Creswell, 2007, p. 151).

Reading and Memoing.

Bogdan and Biklen (1998) argued that “qualitative research …demands that the world be examined with the assumption that nothing is trivial, that everything has the potential of being a clue”, thus, to capture relevant inferences data preparation is an important activity prior to the initial reading of the collected data. Creswell (2007) states “that data management begins the
data analysis process…the researcher organizes their data into file folders, index cards, or computer files…then converts their files to appropriate text units (e.g., a word, or a sentence) for analysis either by hand or computer” (p. 150). The computer-assisted qualitative data analysis software known as NVivo 8 was used to support this study. Launched by QSR International in 2002, NVivo was designed to help qualitative researchers organize and analyze non-numerical or unstructured data by: classifying; sorting and arranging information; examining relationships in the data; and combining analysis into a convenient model. The program’s broad capabilities allowed for the archiving of data from various media sources; including, text, and audio. All digital data files (transcripts, memos, internal and external documents) were imported into QSR’s NVivo 8; QSR International’s most recent version.

Data files were examined multiple times and memos, or short phases, were attached to the files as needed to note major organizing ideas that were later used to establish coding categories. By incorporating all the data into a single project file, it was possible to examine carefully the data to explore trends, test theories and arrive at themes that addressed the research driving questions. In particular, the data files were closely examined to discover whether there were any organizational structural changes that: (1) led to the creation of new departments; (2) realigned the reporting hierarchy; or (3) led to the creation of new organizational processes and procedures. In addition, the files were inspected to determine if the colleges had created formal measures to assess institutional effectiveness or had made any new financial investments in infrastructure to support data archiving and retrieval.

Describing, Classifying and Interpreting.

Merriam (1998) purposed that working with data as you use it gives you the opportunity “to develop emergent insights, hunches, and tentative hypotheses which direct the next phase of
data collection, which in turn leads to refinement or reformation of the questions (p. 151). In qualitative studies, the data gathered tends to be “unstructured data, that is, data that have not been coded at the point of data collection in terms of a closed set of analytic categories”. When working with unstructured or free-flowing text, Denzin and Lincoln (2000) recommends that the researcher uses “key-words-in-context, word counts and coding” to group data into categories for analysis (p. 775). All these techniques were used for this study.

Data coding is a systematic organizing procedure for reducing gathered data into salient themes and categories. According to Lynn Richards (2006), Director of Research Services at QSR International, Melbourne, “qualitative coding is concerned with data retention. The goal is to learn from the data, so that it can be revisited until patterns and explanations are revealed” (p. 86). Richards’s (2006) description of the coding process was used as guidance for coding the data collected for this study.

Coding represents the assignment of designations to data in order to group the data into common themes that will later lead to study findings. The driving questions and purpose statement served as guidance for the analysis phase as theme designations arose from within the data analysis. In particular, emergent themes were explored that related to organizational culture and data-driven decision making, as well as the processes and procedures utilized by community colleges to enhance institutional effectiveness. The data for this study was coded using a four-step framework established by Richards (2006). The four-steps are: (1) descriptive coding; (2) topic coding; (3) analytical coding; and (4) recoding. The created codes were recorded in a codebook. The codebook included a detailed description of each code, inclusion and exclusion criteria, and exemplars of real text for each theme (Denzin & Lincoln, 2000). Table 6 defines each of the four steps involved in the coding process.
Table 6.

Richards Four Steps of Data Coding

<table>
<thead>
<tr>
<th>Coding Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive Coding</td>
<td>Categories derived from information about characteristics or attributes of the participants or sites of study (i.e. gender, age, size of the institution)</td>
</tr>
<tr>
<td>Topic Coding</td>
<td>Category descriptions that arise directly from the topics underlining the driving questions of the research study</td>
</tr>
<tr>
<td>Analytical Coding</td>
<td>Categories derived from interpretation and reflection on the meaning, in context, of all data gathered during the study in relation to the research questions.</td>
</tr>
<tr>
<td>Re-Coding</td>
<td>As new themes emerge previously coded material may be re-coded (modified) or new codes added.</td>
</tr>
</tbody>
</table>

*Note. Adapted from Richards, Lyn (2005) Handling Qualitative Data: A Practical Guide Thousand Oaks, CA; Sage Publications*

The advantage of employing a specific coding procedure was that it shows direct relationships between categories, aided in retrieval of information and assisted with archiving the gathered data into a computerized database that was used for all queries.
Phase 3 Report Preparation.

Representing and Visualizing

The last step in Creswell (2007)’s Data Analysis Spiral is data presentation. Typically, researchers present their findings as a package of what was found into a text, tabular, or figure form; creating a visual image of the data collected to address the study’s driving questions Creswell (2007). Most importantly, the data presentation supports the conclusions and recommendations of the study. “In many ways readers assess a claim made in a study by the strength of the argument supporting it, particularly the soundness of its logic and the quality of its evidence” (Booth, Colomb and Williams, 2003, p. 241). Therefore, data presentation provides a needed summarization that supports the interpretation of the findings of the study. For this effort, the data presentation chapter consists of several short narratives augmented by tabular, as well as graphic and pictorial displays.

In the final phase, the researcher reports on the meaning of the case derived from findings of the study. The conclusions were framed around several arguments that were supported by the study’s findings and informed by the purpose. Also, a priori themes derived from the concepts discussed in the study’s literature review focused the discussion on the strategies for implementing data-driven decision-making practices within community colleges to enhance institutional effectiveness.

Trustworthiness: Validity and Rigor.

Trustworthiness and validity in qualitative studies is accomplished through the application of a continuous set of procedures that are embedded within the research study’s design and data management phases. Creswell 2007) describes “validation in qualitative research studies as a process rather than verification …thus validation in qualitative research is to
suggest that researchers employ accepted strategies to document the accuracy of their studies” (p. 207).

Many perspectives exist regarding the importance of validation in qualitative research (Denzin and Lincoln, 2000, Yin, 2003, Creswell, 2007, Willis, 2007). These researchers have proposed qualitative equivalents that paralleled traditional quantitative approaches to validation. Traditional quantitative approaches utilize four logic tests to judge the quality of any given research design. These logic tests are construct validity, internal validity, external validity and reliability.

- Construct validity: establishing correct operational measures for the concepts being studied
- Internal validity: establishing a causal relationship, whereby certain conditions are shown to lead to other conditions
- External validity: establishing the domain to which a study’s findings can be generalized
- Reliability: demonstrating that the operations of a study; such as the data collection procedures, can be repeated with the same results (Yin, 2003, p. 34).

Lincoln and Guba (1985) proposed an alternate set of naturalistic equivalents to traditional quantitative logic tests. The four terms established by Lincoln and Guba (1985) were credibility, transferability, dependability and confirmability. These measures have become the accepted norm for measurement validity in qualitative research studies. Yin (2003) made Lincoln and Guba (1985)’s terms operational for judging the quality of research design, such as in case studies, and organized them into a typology that depicted “commonly used procedures to establish quality” (p. 33). He summarizes trustworthiness employing the traditional terminology of quantitative research. Table 7 illustrates the four tests used in quantitative studies, their qualitative equivalents and the strategies applied in this study to inform research design and the approaches toward data management.
Table 7.

Validity and Reliability Tests and Case Study Strategies

<table>
<thead>
<tr>
<th>Quantitative Tests</th>
<th>Lincoln &amp; Guba Qualitative Equivalents</th>
<th>Case Study Strategies</th>
<th>Phase of research in which strategies occur</th>
</tr>
</thead>
</table>
| Construct Validity | Confirmability                          | • Use multiple data sources (face-to-face interviews, surveys, documents)  
                          |                          | • Establish chain of evidence (audit trail)  
                          |                          | • Provide transparency of data | Data collection |
|                    |                                        |                       |                                             |
| Internal Validity  | Credibility                             | • Do pattern-matching (coding)  
                          |                          | • Do explanation-building  
                          |                          | • Tracking the data as each of the data collection methods were completed  
                          |                          | • Address rival explanation evidence  
                          |                          | • Provide rich-thick descriptions | Data analysis |
| External validity  | Transferability                         | • Purposefully sampling with random sort applied to identified population  
                          |                          | • Use theory in single-case studies  
                          |                          | • Responsibility of reader | Research design, Literature Review |
| Reliability        | Dependability                           | • Use case study protocol  
                          |                          | • Develop case study database | Data collection |

Table 7 shows the procedures used to establish validity within the research study. Adapted from Yin (2003)

In addition to the general guidance provided by Yin (2003)’s typology for data management, the researcher also applied supplemental procedures, to further establish the credibility of the qualitative inquiry, by assuming various lens or points-of-view from which the study will be evaluated. These procedures developed by Creswell and Miller (2000) and Willis (2007) are shown in Table 8.
### Table 8.

Validity Procedures Used in This Study

<table>
<thead>
<tr>
<th>Lens or Viewpoint</th>
<th>Procedures</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens of the Researcher</td>
<td>Data Triangulation</td>
<td>Search for convergence among multiple and different sources of information to form themes</td>
</tr>
<tr>
<td></td>
<td>Researcher Reflectivity</td>
<td>Researcher discloses their assumptions, beliefs, previous experiences and biases</td>
</tr>
<tr>
<td>Audit trail</td>
<td></td>
<td>Researcher provides clear documentation of all research decisions and activities</td>
</tr>
<tr>
<td>Lens of Study Participants</td>
<td>Member checking</td>
<td>Consists of taking the data back to the participants of the study so that they can confirm the credibility of the narrative account</td>
</tr>
<tr>
<td>Lens of Reader</td>
<td>Thick, rich descriptions</td>
<td>Creates authenticity, statements that produce for the reader the feeling they have experienced or could experience, the events being described in a study</td>
</tr>
</tbody>
</table>
This table documents the validation procedures used throughout this study. Creswell and Miller, 2000, pp. 126-129)

To ensure the rigor of the study, three strategies were employed: (a) triangulation of data sources, (b) use of member checking in regards to the participant’s interview transcripts, and (c) use of peer review (experts) in a pilot study of the interview process and questions. Data triangulation of multiple data sources was used to capture emergent themes. Capturing data from multiple sources (interviews, field notes and documents) or data triangulation improves validity by “clarifying meaning, and verifying the repeatability of an observation or interpretation” (Stake, 2000, p. 443). Given the volume of data generated within qualitative studies, it is important to ensure the completeness and accuracy of the information within the data records.

In addition to establishing a formal data management protocol, external reviews of the data were also completed by means of member checks and peer reviews. Interview transcripts were reviewed by the participants. The technique of member checking ensured that these vital records accurately reflect the views, opinions and thoughts of the study’s participants. Lastly, peer review was instituted throughout the study to review questionnaires, interview questions and the overall research process.

“Qualitative interpretations are constructed. The researcher first creates field text consisting of field notes and documents from the field...then the writer-as-interpreter creates a working interpretive document, public narration for the reader” (Denzin & Lincoln, 2000, p. 23). The data analysis included a priori coding of the interview transcripts, field notes and information gather from content analysis of documents collected during field visits. Content analysis (key-word-in-context) is an unobtrusive technique for gaining insight into the historical context present during the execution of evidenced-based decision-making.
Yin (2003)’s typology and Creswell and Miller (2000)’s validation procedures established the required guidance throughout the qualitative inquiry to achieve credibility in the findings. This attention to the rigor of the research design, data collection and analysis strategies enhances the transferability of the study results to those in the community college field focusing on building and improving institutional effectiveness.

_Ethical Considerations._

Throughout all phases of the research study process, attention was paid to ethical considerations. “Since the 1980’s, each of the major scholarly associations have adopted ethical guidelines for directing qualitative inquiries. These guidelines consist of informed consent, deception, privacy and confidentiality and accuracy” (Christians, 2000, p. 138). The concept of informed consent is consistent with the notion of individual autonomy, where consent must be given freely based on a clear understanding of what is required of the study participants. The researcher reviewed with each participant details of the research study using the consent form as a guide. This review included the purpose of the research, expectations of the participants, potential risks involved, when and if they might withdraw from the study, and the maintenance of the confidentiality of their information and the anonymity of their responses.

The research proposal for this qualitative inquiry was submitted to the National-Louis University Institutional Research Review Board to ensure that the study complied with established policies and procedures. Participant consent forms (Appendix B) were reviewed with each participant during a face-to-face conference prior to the actual interview. Two copies of the consent form were signed, one kept by the participants and the second for the researchers files. To ensure privacy and confidentiality all participants and locations were assigned
pseudonyms. Also, a signed confidentiality agreement was obtained from the professional transcriptionist (Appendix E).

Limitations.

“Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible” (Denzin and Lincoln (2000, p. 3). While the researcher’s goal is to prepare a purposeful research design, there still are limitations. Patton (1990) described the situation perfectly when he stated that, “there are no perfect research designs. There are always trade-offs [or limitations]” (p. 162). The identified limitations within this study are two: (1) the need to seek an alternative community college; and (2) the comprehensive recall of information garnered from participants.

The research design was initially prepared to conduct interviews with nine participants. After the three community colleges were contacted to solicit their participation, one of the sites had to later decline due to vacancies in their senior and administrative ranks. An alternative school aligned with the study’s selection criteria was randomly selected. This alternate college had only two of the required positions staffed. The decision was made to retain this school in the study because the individual occupying the senior leadership and administrative position had adequate tenure in the position at the college to offer sufficient detail about the transition to AQIP and the current efforts to integrate data-driven decision-making practices into the culture of the institution. Therefore, eight rather than nine participants were interviewed for this study.

The second limitation was the quality of the participant’s recall of events. This can be less than optimal given the time that elapsed since the institution migrated to the Academic Quality Improvement Program for accreditation. To address this limitation, semi-structured interview question were designed to facilitate responses and also to elicit the understandings and
experiences of the participants. Probing questions, as suggested by Rubin and Rubin (2005) were used to “manage the conversation by regulating the length of answers and degree of detail, clarifying unclear sentences or phases, filling missing steps and keeping the conversation on topic” (p. 164). Specific probing techniques that were used in each of the interviews consisted of: (1) continuation probes (encouraged interviewees to keep talking on a specific subject); (2) elaboration probes (asking for greater detail on a concept); attention probes (use of voice inflections to show interest in response); (4) clarification probes (asking for explanation of an unknown subject); and (5) steering probes (lead participant back to the intended path).

Researcher as Research Instrument.

Qualitative studies are situated engagements that require direct involvement of the researcher with the participants of the study. Creswell (2007) explained that “the qualitative researcher collects data themselves through examination of documents or by observing behavior…. [While] they may use instruments, ultimately they are the ones who actually gather information” (p. 38). The intimate link between the researcher and the study qualitative inquiry is paramount to the execution of the qualitative research study. “Qualitative research is a form of inquiry in which researchers make an interpretation of what they see, hear, and understand. The researcher’s interpretation cannot be separated from their own background, history, context, and prior understanding” (Creswell, 2007, p. 39). Given the interpretive nature of qualitative studies, disclosure of the researcher’s background informs the reader of the researcher’s context that helped to shape their interpretation of the study’s findings.

The researcher has experience in both community college and corporate settings. Prior to joining the community college, the researcher worked for several corporations across multiple industry segments; including, information technology consulting, banking, airline operations,
and chemical operations management. In 1982, he obtained a Bachelor’s degree from the Illinois Institute of Technology. He was employed for five years as a chemical engineer at Dow Chemical Company. After this time, he returned to graduate school to enhance his professional training and business acumen and completed a Masters in Business Administration with a concentration in Finance and Operations in 1989 from the University of North Carolina. After graduation, he continued his professional career working for First National Bank of Chicago, United Airlines, IBM Corporation prior to joining City Colleges of Chicago. These professional experiences exposed the researcher to general business management, finance and accounting principles used within the corporate and non-for-profit communities.

He has been employed as a full-time faculty member since 2006 and currently serves in an administrative and faculty role at one of the seven City of Chicago’s community college campuses. As program director for the Business and Computer Information Systems Programs, he is responsible for curriculum design, course management and full-time and adjunct faculty scheduling. Further, he is a member of the assessment and entrepreneurship committees. On the assessment committee, he represents the department on matters regarding student learning outcomes and compliance with accreditation reporting requirements. On the entrepreneurship committee, the researcher represents the college as a member of a District-wide focus group tasked with the responsibility of developing curriculum for five new course offerings that provide students with the opportunity to earn a certificate in entrepreneurship. Lastly, his administrative responsibilities also include participation on sub-committees responsible for supporting the college’s strategic plan initiatives and preparation of the annual budget. As a faculty member, the researcher is an instructor of courses in the business administration, accounting, finance and entrepreneurship disciplines.
Summary

This chapter provided a description of the qualitative research paradigm, as well as theoretical support for its applicability to this study. This study focused on three community colleges participating in the Academic Quality Improvement Program (AQIP). In particular, the study limited the number of colleges eligible for selection to schools located in the Higher Learning Commission North Central Association. Several criterion-based sampling strategies were employed to enhance the trustworthiness and validity of the study, as well as achieve the desired study population of three mid-western community colleges.

Participants were selected following the application of criterion including job classification, job tenure, and level of involvement with the Academic Quality Improvement Program at their respective colleges. All selected study representatives participated in semi-structured interviews and completed surveys regarding their organization’s cultural climate. Interview and survey responses, as well as other relevant documents gathered from the colleges were transposed into a digital format and imported into a qualitative analysis software package (NVivo 8). NVivo 8 was used to archive and classify and code the data and to provide visibility to query the findings. These findings were later analyzed to identity themes, patterns and commonalities between the data elements.

To ensure trustworthiness and credibility of the study’s findings and conclusions, validation strategies and procedures outlined by Creswell and Miller (2000), Yin (2003) and Willis (2007) were used throughout the study’s design and data management and analysis phases. Limitations were three: (1) the need to seek an alternative community college; (2) interview of eight instead of nine participants; and (3) recall limitations of participants due to
decreased memory of events over time. Further, to address the issue of researcher bias, detailed reflective field notes and a documented audit trail will be maintained.
Chapter 4 - Data Collection and Presentation

Introduction

The purpose of this study is to identify the data driven decision-making processes and procedures utilized by exemplary community colleges to enhance their institutional effectiveness. All organizations, including community colleges, are impermanent structures and are constantly adjust their management approaches and organizational design in order to respond to ever-changing external (political, financial, social) and internal (evolving student and trustee requirements) forces. Today, community college leaders face increased pressures to realign their organizations to integrate traditional business performance management methodologies into a higher education environment. The primary focus of this inquiry was to obtain an understanding of the processes, procedures, and support infrastructures established by each college to fully integrate business performance methodologies and to ensure data integrity and data access to all internal or external (i.e. trustees) end users.

From the information processing perspective, organization design is a critical aspect of the knowledge management process; that is, “the data management capabilities of the institution will depend on the goals of the college, management hierarchy, data systems infrastructure”, organizational climate and the core work processes in place to identify key performance indicators and assess their significance (Weick, 2009, p. 71). Material to readers of this study will be the findings that describe the best practices in place at these institutions to sustain organizational development and motivate administration, faculty and staff to prefect the use of business performance tools to improve organizational effectiveness.

This chapter presents information regarding data collected, data management, and findings that emerged from this qualitative study of three Midwestern community colleges.
committed to continuous quality improvement. To accomplish their objective of continuous quality improvement, the colleges developed appropriate measures of performance that highlight achievements, and identified areas for further development. Performance reporting or data driven decision-making provides a framework for creating a portfolio of key performance measures and the colleges selected have been engaged in developing business processes to support their data collection and analysis activities. Participating colleges were nominated by the Higher Learning Commission as eligible sites for this engagement. The colleges were located in the states of Wisconsin, Michigan and Iowa. Interviews were administered with representatives from each of these college’s administrative and academic departments. The interview participants included a Vice President, Dean and faculty member from each college. The diversity of participant pool provided broad perspectives insights on the successes and challenges each college experienced while attempting to implement business performance.

Contact Protocols and Data Collection

The study took place over a two-month period beginning on March 21, 2010 and ending on May 26, 2010. The study began with a pilot interview session at a local college, which was involved in similar institutional effectiveness activities. This institution fulfilled the requirements specified by the study’s site and participant selection process, was contacted, and agreed to take part in the pilot. The purpose of the pilot interview session was to enhance the interview skills of the researcher and to validate the quality of the interview questions. The interview session lasted for a total of seventy-five minutes with fifteen minutes for setup and execution of the confidentiality statement. The remaining sixty minutes was apportioned for the interview. The session was recorded on dual digital recorders. These steps were taken to simulate the conditions that would be present during the actual field interviews. At the
conclusion of the interview, the volunteer was immediately debriefed. The pilot participant confirmed that the questions elicited the appropriate information to address the purpose and that the flow of the session was appropriate; thus, no changes were made to the interview questions nor method of delivery. All the pilot data were destroyed and none of the findings were used in this study.

The participant selection process included a random sampling methodology. A criterion-based sample of the Higher Learning Commission Academic Quality Improvement Program (AQIP) database was taken to identify a representative sample. Several sampling strategies and criteria filters were employed to reduce the pool of eligible colleges to three community colleges. Sampling strategies consisted of purposeful sampling, random sort, and maximum variation. The colleges selected were differentiated by enrollment size according to the Carnegie Classifications for Higher Education and by their tenure within the AQIP.

The study’s design called for interviews with a total of nine participants, three (3) from each college. The individuals selected held the positions of vice president, academic dean and faculty. Capturing data at all three levels was critical to the research, because the extended effort included comments from key constituent groups offering a more holistic view of the perceived quality of the data-driven decision-making practices at the respective locations and the extent of organizational development that has taken place to integrate these new practices. A letter of introduction was sent to the Office of the President of each of the selected colleges inviting the college to participate in the study. The letter was composed jointly by a member of the Higher Learning Commission and the researcher. The Colleges were contacted by telephone within seven days of the receipt of the letter by telephone to confirm receipt and acceptance of the invitation. The president’s office selected participants who met the study’s requirements. After
the list of participants was finalized, each participant was screened by the researcher during a telephone conversation to confirm that each met the selection criteria. One week prior to the interview date, the nine interview questions were sent to each participant using their school’s electronic mail system. Interviews were conducted in person on the respective campuses.

Prior to the start of the scheduled interviews, one of the community colleges selected to represent the medium-size college declined to participate because of an unfilled vacancy in the position of Vice President of Academics. A replacement college was selected following a second random selection process. After contacting a representative at the replacement college, it was learned that the Chief Academic Officer held two positions: Vice President and Dean of Academics. Consequently, only two individuals from this college were available to participate in the study; this resulted in a total of eight interviews for the entire study. Despite the variation in the study’s design, the college was accepted because of the Chief Academic Officer’s extensive senior-level administrative experiences which enable him to speak confidently about the diffusion of data-driven decision-making practices on campus.

Data Collection

Three basic types of information were gathered during the study’s data collection phase. These data elements were interviews internal college documents, reports (ranging from private to public), and a survey questionnaire.
Participant Interviews.

The management of participant interviews adhered to the protocol outline in Creswell’s (2007) Data Analysis Spiral for qualitative studies. A piloted interview was conducted at a college that met the criteria of the study to gauge the quality of the questions, measure pace and practice delivery. The pilot provided an opportunity to gauge the quality of the questions, measure pace of the interview session, and to practice delivery of the questions. Audio tapes from the pilot were not included in the findings, and they were destroyed prior to the commencement of the formal interviews. Each participant signed a consent form at the start of the interview. All interviews were recorded using two Sony digital recorders. The equipment employed to ensure that the interviews were completely captured included: (1) Sony model ICD-UX71MP3 IC Recorder and (2) Sony Model ICD-PX312 Digital voice Recorder. Recording redundancy was used to ensure no session recordings would be lost.

All interviews were conducted following a specific protocol; the interview questions were sent in advance of the meeting and the same questions were asked during the actual interview. The semi-structured interview questions were asked in sequential order to maintain consistency. If a participant offered relevant information prior to a question being asked, the information was recorded under the appropriate question and the event was recorded in the field notes. To avoid errors of omission, the researcher asked any previously referenced question again in the proper when it was reached in sequence, in order to solicit additional insights from the participants. No question was left unanswered.

Probing questions were used throughout the interview to motivate participants to expand on, clarify or complete his or her answers; to stimulate discussion of a topic related to the subject
raised in the interview question; or to guide the interview along a path that focused on specific content in order to avoid irrelevant or unnecessary information. Specific probing strategies used during the interview were: (1) repeating questions, (2) repeating the respondent’s reply, (3) asking neutral or clarifying questions, and (4) scaffolding or asking additional questions that built upon a participant’s first response. These responses were recorded verbatim. In addition to the recordings of the participants, the interview’s verbal field notes were recorded immediately following each interview to provide context. These notes included: the pace and flow of the interview, changes in intonations from the participant, and background noises or interruptions that may have interrupted the flow of the interview. Audio recordings were transcribed by a professional transcriptionist.

Documents.

Several types of documents were collected and assessed for this study; including internal progress reports, such as the AQIP Systems Portfolio; Constellation Survey; and AQIP Project Survey Summary. These documents were found on either the HLC AQIP Website or each college’s Website. Table 9 identifies each document and the information extracted from the source.
Table 9.

Document Source and Information Obtained

<table>
<thead>
<tr>
<th>Document Source (Location)</th>
<th>Document Description</th>
<th>Information Obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Appraisal Feedback Report (College Web-site)</td>
<td>The systems appraisal is an executive summary of the organization’s progress toward quality improvement and provides a system-side evaluation of the organizational strengths, weaknesses and improvement opportunities as reported by campus administrators, faculty and staff.</td>
<td>Report provided information on data management processes, data infrastructure and implementation status of data-driven decision making practices and procedures.</td>
</tr>
<tr>
<td>Constellation Survey (College Web-site)</td>
<td>The survey offers insights into the organization climate, in particular employee perceptions of the work environment, communication protocols and organizational readiness for change.</td>
<td>Opinion survey that provided perceptions of organizational climate</td>
</tr>
<tr>
<td>Summary of AQIP Projects (HLC &amp; College Web-site)</td>
<td>The survey summary highlights the institution’s efforts and results of specific projects to improve organizational performance.</td>
<td>Identified specific projects targeting data management and analysis</td>
</tr>
</tbody>
</table>

*Note: Document description taken from the *Academic Quality Improvement Program, The Higher Learning Commission.* Copyright 2007.*

These internal progress reports provided considerable insights into the current practices, processes, and data management capabilities in support of efforts by the participating community college to establish a viable data-driven decision-making climate. Further, these reports highlighted specific areas of success, areas of challenge, past metrics and current strategies used to gauge institutional effectiveness throughout the institution.
Survey Questionnaire.

The Organization Culture Assessment Questionnaire (OCAQ) served two purposes. First, the survey gathered demographic information about each participant, including job title and length of tenure with the college. Second, the survey gathered information regarding participants’ characterization of the organizational climate at their respective campuses. Further, the survey asked participants to comment on the level of collaboration between internal and external stakeholders and the organization, especially in light of their institutions’ ongoing structural changes to accommodate the integration of data-driven decision-making practices.

The OCAQ included questions regarding the leadership style on campus, developed by the researcher, and supplemental questions adopted from a research study administered by Daniel Denison. Denison (1996) studied the influence of organizational culture as an important lever in the organizational change process. Establishing a continuous quality improvement environment within community colleges, supported by data-driven performance analysis and reporting, requires significant organizational change to work systems and decision methodologies. According to Denison, “culture provides leverage by creating a code for an organizational system that influences behavior over time. Culture is an important place to intervene when trying to create change that lasts….changes that are not reflected in an organization’s culture will not last and will not be translated into action” (p. 368).

Gleaning a better understanding of how the community college’s culture evolves as the institutions integrate institutional effectiveness activities has relevancy to this study and has been supported by organizational development researchers such as Robert Stringer (2002). Fundamentally, in order to sustain organizational innovation, the organization’s leadership must
be able to influence the culture and consequently the behavior of its employees to support the initiative and thereby achieve the organization’s desired outcomes. The questionnaire captured participants’ perceptions of the organization’s culture and grouped the responses into four culture descriptors: involvement, consistency, adaptability and mission. Table 10 defines each of the organizational descriptors based on Denison’s (1996) research.

Table 10.
Denison’s Organizational Culture Definitions and Descriptors

<table>
<thead>
<tr>
<th>Descriptors</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td>Effective organizations empower their people, build their organization around teams, and developed human capability at all levels.</td>
</tr>
<tr>
<td>Consistency</td>
<td>Organizations with this trait have a strong and distinctive culture that significantly influences people’s behavior.</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Adaptable organizations are driven by the constituents they serve, take risks and learn from their mistakes, and have capability and experience at creating change.</td>
</tr>
<tr>
<td>Mission</td>
<td>Successful organizations have a clear sense of purpose and direction that defines organizational goals and strategic objectives and expresses a vision of what the organization will look like in the future.</td>
</tr>
</tbody>
</table>

Denison developed questions related to the organizational descriptors. These questions provide a lens into the college’s self-identified culture and were used verbatim in the questionnaire. Using a companion Likert scale, participants selected a response that best described their beliefs. The Likert scale offered four possible ranking choices: Strongly Disagree, Disagree, Agree and Strongly Agree. Table 11 shows each of culture descriptors and their assigned questions.

Table 11.
Organization Culture Assessment Questionnaire - Focus Areas and Survey Questions
<table>
<thead>
<tr>
<th>Culture Descriptors</th>
<th>Survey Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants were asked to select the response that best represented their reaction to the statements below</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team Orientation</th>
<th>Survey Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation across different parts of the organization is actively encouraged</td>
<td></td>
</tr>
<tr>
<td>Administrators, faculty, staff, support personnel work like they are part of a team</td>
<td></td>
</tr>
<tr>
<td>Teamwork is used to get work done rather than hierarchy</td>
<td></td>
</tr>
<tr>
<td>Teams are our college’s primary building blocks</td>
<td></td>
</tr>
<tr>
<td>Work is organized so that each person (administrators, faculty, staff, support personnel) can see the relationship between his and her job and the goals of the organization</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coordination and Integration</th>
<th>Survey Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our approach to doing business is very consistent and predictable</td>
<td></td>
</tr>
<tr>
<td>People from different parts of the organization share a common perspective</td>
<td></td>
</tr>
<tr>
<td>It is easy to coordinate projects across different parts of the organization</td>
<td></td>
</tr>
<tr>
<td>Working with someone from another part of this organization is like working with some from a different organization</td>
<td></td>
</tr>
<tr>
<td>There is a good alignment of goals across college levels and departments</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Customer Focus</th>
<th>Survey Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student and community comments and recommendations often leads to changes</td>
<td></td>
</tr>
<tr>
<td>Student and community input directly influences the college’s decisions</td>
<td></td>
</tr>
<tr>
<td>All members (administrators, faculty, staff, support personnel) of the college have a deep understanding of student and the community wants and needs</td>
<td></td>
</tr>
<tr>
<td>The interests of students and the community often get ignored</td>
<td></td>
</tr>
<tr>
<td>Goals and Objectives</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>There is widespread agreement about the college’s goals</td>
<td></td>
</tr>
<tr>
<td>The college’s president and senior administrators have “gone on record” about the objectives the college is trying to meet</td>
<td></td>
</tr>
<tr>
<td>The college’s president and senior administrators set goals that are ambitious, but realistic</td>
<td></td>
</tr>
<tr>
<td>The college’s president and senior administrators continuously track the college’s progress against our stated goals</td>
<td></td>
</tr>
<tr>
<td>Administrators, faculty, staff and support personnel understand what needs to be done for the college to succeed in the long term</td>
<td></td>
</tr>
</tbody>
</table>

Surveys were sent electronically to each participant (within 48 hours of the face-to-face interview). Rankings from the surveys were compiled and a conceptual map was constructed to describe the salient features of the cultural environment providing a more holistic context of each participating college.

**Data Management.**

The research design generated a rich and contextual portfolio of data. To manage the volume of data, the procedural steps outlined in Creswell’s (2007) Data Analysis Spiral were followed. Creswell’s analytical framework consists of a sequence of well-defined steps beginning with data collection; followed by data management; reading and memoing; describing, classifying and interpreting; and representing and visualizing. As part of the systematic approach undertaken for this study, all data types were imported into a qualitative data analysis software package. QSR International’s NVivo 8 was selected as the software package for the
organization and analysis of all research data. The use of the NVivo 8 software package in this study allowed for efficient data classification and querying. Also, the use of NVivo 8 facilitated the examination of data to identify reoccurring patterns and formal relationships.

Based on the purpose of the study, the researcher pursued several focus areas of inquiry and utilized data from multiple sources to identify evidence that would address the research questions and inform the conclusions of the study. Table 12 illustrates the focus areas of inquiry and the data sources used.

Table 12.

Focus Areas of Inquiry and Data Sources

<table>
<thead>
<tr>
<th>Focus Areas of Inquiry</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivators that moved the college toward the AQIP</td>
<td>Transcripts, System Portfolio</td>
</tr>
<tr>
<td>Process to instill the data-driven quality philosophy on campus</td>
<td>Transcripts, Systems</td>
</tr>
<tr>
<td>Identify data-driven decision-making processes and procedures on campus</td>
<td>Transcripts, Systems</td>
</tr>
<tr>
<td>Explain how data management is performed on campus</td>
<td>Transcripts, Systems Portfolio</td>
</tr>
<tr>
<td>Role of organizational culture in facilitating or deterring data-driven decision-making</td>
<td>Transcripts, Organizational Culture Survey, Systems</td>
</tr>
<tr>
<td>Identify the measures to assess institutional effectiveness</td>
<td>Transcripts, Systems</td>
</tr>
<tr>
<td>Explain how diffuse the data-driven decision-making initiative is within the institution</td>
<td>Transcripts, Systems</td>
</tr>
</tbody>
</table>

Findings emerging after reading, memoing, and data classification were consolidated and presented in data tables.
Data Display.

The data displays provide the following functions: (1) to present demographic data for each college and participant; and (2) to illustrate key findings that emerged after the data were sorted, coded and classified. This section is organized into four sections. The first section presents a profile of demographic data on the colleges and participants. The second section summarizes the responses from the Organization Culture Assessment Questionnaire. The third section summarizes the pace of deployment of data-driven decision-making practices within participating colleges; characterizes the level of preparedness as these colleges transition to a culture of evidence and describes the data management capabilities of the colleges.

Participant Demographic Profile.

Demographic information was gathered from the Higher Learning Commission’s Website and was supplemented with information on institution size as defined by the Carnegie Classifications for Higher Education. Table 13 list the participating colleges, estimated full-time equivalency (FTE) counts and length of membership in the AQIP.

Table 13

<table>
<thead>
<tr>
<th>College Identifier</th>
<th>Location</th>
<th>Carnegie Classification (Size/Setting)</th>
<th>FTE Estimate</th>
<th>Tenure in AQIP (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Iowa</td>
<td>M2 Medium/2-Year</td>
<td>3,500</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>Michigan</td>
<td>L2 Large/2-Year</td>
<td>8,500</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>Wisconsin</td>
<td>VL2 Very Large/2-Year</td>
<td>10,000</td>
<td>8</td>
</tr>
</tbody>
</table>
Note: This table shows a profile of the sites selected for the study. The data shown includes a descriptor for the size of the college and estimated enrollment statistics. FTE: Full-time equivalent annual enrollment calculated as full-time plus one-third part-time.

As shown in Table 10, the length of membership as AQIP colleges has been long-term, with a minimum tenure of five years. Clearly, such length of time would afford administrators and faculty knowledge of the management and quality principles that underlie the AQIP’s Criterion 7 process. Demographic information was gathered from each participant utilizing a brief survey. Each college was designated by an identifying code to maintain strict confidentiality and each participant was designated by a code to maintain anonymity. The code components are defined in Table 14.

Table 14.

Coding Labels Utilized for Colleges and Participants

<table>
<thead>
<tr>
<th>Label</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>P{ _ }</td>
<td>Participant {College Identifier}</td>
</tr>
<tr>
<td>SA</td>
<td>Senior Administrator</td>
</tr>
<tr>
<td>DA</td>
<td>Dean Administrator</td>
</tr>
<tr>
<td>FR</td>
<td>Faculty Representative</td>
</tr>
<tr>
<td>C{ _ }</td>
<td>College {College Identifier}</td>
</tr>
</tbody>
</table>

The survey was sent to each participant electronically immediately following the interview. Table 15 shows the demographic profile of the participants.
Table 15.

Demographic Profile of Participants by Site, Tenure and Years with College

<table>
<thead>
<tr>
<th>Participant</th>
<th>Participant Position</th>
<th>Site</th>
<th>Tenure with College (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Chief Academic Officer</td>
<td>Iowa</td>
<td>13</td>
</tr>
<tr>
<td>P2</td>
<td>Faculty</td>
<td>Iowa</td>
<td>5</td>
</tr>
<tr>
<td>P3</td>
<td>VP Academic Affairs</td>
<td>Michigan</td>
<td>4</td>
</tr>
<tr>
<td>P4</td>
<td>Dean</td>
<td>Michigan</td>
<td>17</td>
</tr>
<tr>
<td>P5</td>
<td>Faculty</td>
<td>Michigan</td>
<td>17</td>
</tr>
<tr>
<td>P6</td>
<td>Vice President Strategic Planning</td>
<td>Wisconsin</td>
<td>8</td>
</tr>
<tr>
<td>P7</td>
<td>Dean</td>
<td>Wisconsin</td>
<td>2</td>
</tr>
<tr>
<td>P8</td>
<td>Faculty</td>
<td>Wisconsin</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: A total of eight individuals participated in the study and the core groups (senior administrator, dean-level and faculty) within each college were represented. The Chief Academic Officer at the Iowa site served a dual role as Vice President and Dean of Academics.

A Priori Themes for Analysis of Findings.

Findings from the study were organized and analyzed by the three *a priori* themes presented in Chapter 2 Literature Review: leadership, knowledge management and organizational climate. The Organization Culture Assessment Questionnaire provided information regarding the leadership styles used by each institution, and also generated information that was used to characterize the organizational culture. Separate analytical models were used to present visual representations of the findings for organizational climate and knowledge management capabilities found on each of the campuses. Stringer’s (2002) used the
Organizational Climate Model to describe organizational climate; and Ikemoto and Marsh (2007) used the Data-driven Decision Making Analysis Framework to evaluate each college’s knowledge management capabilities.

*Campus Leadership Profiles.*

Leaders, such as presidents and senior administrative staff, champion the direction of the colleges. Participants were asked to describe the leadership style of the college president and senior administrators. Table 16 shows the leadership style descriptors selected by the each participant.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Participant Position</th>
<th>Site</th>
<th>Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Chief Academic Officer</td>
<td>Iowa</td>
<td>Mentor, Facilitator</td>
</tr>
<tr>
<td>P2</td>
<td>Faculty</td>
<td>Iowa</td>
<td>Coordinator, Organizer</td>
</tr>
<tr>
<td>P3</td>
<td>VP Academic Affairs</td>
<td>Michigan</td>
<td>Entrepreneurial, Innovator</td>
</tr>
<tr>
<td>P4</td>
<td>Dean</td>
<td>Michigan</td>
<td>Coordinator, Organizer</td>
</tr>
<tr>
<td>P5</td>
<td>Faculty</td>
<td>Michigan</td>
<td>Entrepreneurial, Innovator</td>
</tr>
<tr>
<td>P6</td>
<td>Vice President Strategic Planning</td>
<td>Wisconsin</td>
<td>Entrepreneurial, Innovator</td>
</tr>
<tr>
<td>P7</td>
<td>Dean</td>
<td>Wisconsin</td>
<td>Mentor, Facilitator</td>
</tr>
<tr>
<td>P8</td>
<td>Faculty</td>
<td>Wisconsin</td>
<td>Entrepreneurial, Innovator</td>
</tr>
</tbody>
</table>
Organizations are living and dynamic entities that manifest unique characteristics and traits. Participants were asked to describe the institutional traits that are present and serve to bind their organizations. Table 17 shows the organizational traits identified by each participant.

Table 17.

College Organization Traits as Identified by the Participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Participant Job Title</th>
<th>Site</th>
<th>Organization Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Chief Academic Officer</td>
<td>Iowa</td>
<td>Loyalty, Tradition</td>
</tr>
<tr>
<td>P2</td>
<td>Faculty</td>
<td>Iowa</td>
<td>Loyalty, Tradition</td>
</tr>
<tr>
<td>P3</td>
<td>VP Academic Affairs</td>
<td>Michigan</td>
<td>Loyalty, Tradition</td>
</tr>
<tr>
<td>P4</td>
<td>Dean</td>
<td>Michigan</td>
<td>Loyalty, Tradition</td>
</tr>
<tr>
<td>P5</td>
<td>Faculty</td>
<td>Michigan</td>
<td>Innovation, Development</td>
</tr>
<tr>
<td>P6</td>
<td>Vice President Strategic Planning</td>
<td>Wisconsin</td>
<td>Loyalty, Tradition</td>
</tr>
<tr>
<td>P7</td>
<td>Dean</td>
<td>Wisconsin</td>
<td>Innovation, Development</td>
</tr>
<tr>
<td>P8</td>
<td>Faculty</td>
<td>Wisconsin</td>
<td>Goals, Accomplish</td>
</tr>
</tbody>
</table>

Organizational Climate Findings

The following section summarizes the collected data and findings and describes the organizational climate for each college. The data displays were developed from the Organization Culture Assessment Questionnaire (OCAQ), as well as anecdotal evidence extracted from the
interview transcripts, internal documents and internal reports. Organizational climate is influenced by seven important levers. These levers have a direct effect on the readiness of institutions to accept organizational change as they integrate new strategic initiatives, such as data-driven decision-making. These levers have been described by Robert Stringer (2002), noted organizational development scholar, as: (1) culture, (2) structure, (3) standards, (4) responsibility, (5) recognition, (6) support, and (7) commitment. These descriptors were used as filters in the NVivo 8 database to sort and arrange the data for analysis. Of the seven levers, organizational culture has the greatest influence on interactions among organizational members and ultimately the organization will take toward acceptance or rejection of a new strategic direction. So in practice, college leaders will turn to adjusting structure, standards, responsibility, recognition, support, and commitment to mold their institutional culture in a manner that leads to favorable support of new initiatives as they are integrated into the organizational design. The OCAQ makes inquiries of the participants to identify the key drivers of their organizational climate.

Results of OCAQ.

Each participant completed a twenty-six question survey. Tables 30, 31, 32, and 33 summarize the responses to the survey. To maintain confidentiality and anonymity the responses were aggregated. Participants selected a response that best described their perceptions from a companion Likert scale. The Likert scale offered four possible ranking choices. Each participant selected between one of the following possible responses for each question: Strongly Agree, Agree, Disagree and Strongly Disagree. Each table shows the tally for each question with responses assigned a rank-score between 1 and 4; with 1 representing “Strongly Disagreed” and
4 representing “Strongly Agreed”. The median was calculated for each response to arrive at a composite score that indicates the central tendency of the data.

Table 18 represents participant attitudes toward involvement and teamwork. In general, the participants were in agreement that there is a level of cooperation that exists across the different parts of the organization. In general, administrators, faculty, staff and support personnel are creating an environment in which teaming is utilized; however, it was noted that the participant comments were not uniform regarding the organization of the work. The survey findings indicate that participants felt that work processes could be better structured so that each stakeholder could see the relationships between his or her responsibilities and the goals of the organization.

Table 18.
Organizational Culture Survey: Perception of Involvement and Team Work Orientation

<table>
<thead>
<tr>
<th>Perceptual Statements</th>
<th>Participant Responses (Count)</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation across different parts of the organization is actively encouraged</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Administration, faculty, staff and support personnel work like they are part of a team</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Teamwork is used to get work done rather than hierarchy</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Teams are our college’s primary building blocks</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Work is organized so that each person (administrators, faculty, staff, support personnel) can see the relationship between his and her job and the goals of the organization</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3.00</td>
<td></td>
</tr>
</tbody>
</table>

SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Agree

Table 19 illustrates the participants’ perceptions about consistency within the organization as related to coordination and integration. Participants uniformly expressed the sentiment that their organizations could improve coordination and integration. Specifically,
participants felt that the organization could better ensure that all levels of the organization share a common perspective and that projects are coordinated across the entire organization. They agreed that their organization’s approach to doing business is very consistent and predictable and that they can seamlessly coordinate projects across organizational boundaries, or silos, with people from different parts of the organization.

Table 19.

Organizational Culture Survey: Perception of Consistency Related to Coordination and Integration

<table>
<thead>
<tr>
<th>Perceptual Statements</th>
<th>Participant Responses (Count)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our approach to doing business is very consistent and predictable</td>
<td>SA  A  D  SD  Median</td>
</tr>
<tr>
<td>People from different parts of the organization share a common perspective</td>
<td>2    4   2   0   3.00</td>
</tr>
<tr>
<td>It is easy to coordinate projects across different parts of the organization</td>
<td>0    6   2   0   3.00</td>
</tr>
<tr>
<td>Working with someone from another part of this organization is like working with someone from a different organization</td>
<td>0    3   4   1   2.00</td>
</tr>
<tr>
<td>There is good alignment of goals across college levels and departments</td>
<td>2    4   2   0   3.00</td>
</tr>
</tbody>
</table>

SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Disagree

Table 20 presents the participants’ attitudes toward adaptability and customer focus. There was strong agreement that student and community input directly influences the college’s decisions. There was slightly less agreement among participants that all members (administrators, faculty, staff, and support personnel) have an understanding of student and community demands and needs. The study found, not surprisingly, that all participants encourage direct contact between stakeholders (students and the community) and college administrators, faculty and support personnel.
Table 20.

Organizational Culture Survey: Perception of Adaptability and Customer Focus

<table>
<thead>
<tr>
<th>Perceptual Statements</th>
<th>Participant Responses (Count)</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student and community comments and recommendations often lead to changes</td>
<td></td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>3.00</td>
</tr>
<tr>
<td>Students and community input directly influences the college’s decisions</td>
<td></td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>3.00</td>
</tr>
<tr>
<td>All members (administrators, faculty, staff, support personnel) of the college have a</td>
<td></td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3.00</td>
</tr>
<tr>
<td>deep understanding of student and the community wants and needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The interests of students and the community often get ignored in our college’s decisions</td>
<td></td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>3.00</td>
</tr>
<tr>
<td>We encourage direct contact with students and the community by our administrators,</td>
<td></td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>3.00</td>
</tr>
<tr>
<td>faculty and support personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Agree

Table 21 illustrates participant attitudes toward their organization’s fulfillment of the mission and goals and objectives. Again there was strong agreement among participants that their president and senior administrators set goals that are ambitious, but realistic and that these individuals also publically stated the college’s objectives. Participants did, however, express that the senior leadership team needed to improve methods for tracking college performance against stated goals.
Organizational Culture Survey: Perception of Mission and Goals and Objectives

<table>
<thead>
<tr>
<th>Perceptual Statements</th>
<th>Participant Responses (Count)</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is widespread agreement about the college’s goals</td>
<td>1 5 2 0</td>
<td>3.00</td>
</tr>
<tr>
<td>The college’s president and senior administrators set goals that are ambitious, but realistic</td>
<td>2 5 1 0</td>
<td>3.00</td>
</tr>
<tr>
<td>The college’s president and senior administrators have “gone on record” about the objectives the college is trying to meet</td>
<td>2 5 1 0</td>
<td>3.00</td>
</tr>
<tr>
<td>The college’s president and senior administrators continuously track the college’s progress against our stated goals</td>
<td>1 3 4 0</td>
<td>2.00</td>
</tr>
<tr>
<td>Administrators, faculty, staff and support personnel understand what needs to be done for the college to succeed in the long term</td>
<td>1 4 3 0</td>
<td>3.00</td>
</tr>
</tbody>
</table>

SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Agree

*Findings from Participant Transcripts.*

Participants’ descriptions of organizational climate, taken from participant transcripts, were coded according to filters developed by Stringer (2002). The coding categories were: (1) structure, (2) standards, (3) responsibility, (4) recognition, (5) support, and (6) commitment. According to Stringer (2002), these categories or motives “gives organizational leaders a language for [assessing] and managing organizational culture”; understanding that, “climate is more manageable than culture and is an effective way to change organizational culture in the long-run” (p. 18). For each category, Stringer developed a two level rating scale where the rating of “Low” signified an area for improvement and a rating of “High” represented an area in which the organization was meeting expectations. Tables have been prepared for each category and the consensus rating for each category has been highlighted with a shadow box. Also, a brief summary of the participants’ views is included in each table.
Participants did not share in-depth perceptions for each of these six categories. Three categories, Responsibility for Colleges, Support in Colleges, and Commitment in Colleges were seen as meeting the “High” standard of measurement. Two of the categories, Structure for Colleges, and Standards for Colleges were seen as “Low” measurement or not meeting the desire standards in their colleges.

Notably, responses specific to one of the categories, Recognition in Colleges, were absent from the conversations recorded during the interview sessions, an indication that participants were unaware of any rewards or special acknowledgements that recognize employees’ efforts to integrate data-driven management practices across departmental boundaries. Tables 22 through 29 show the summary findings of the climate analysis.

Table 22.
Organizational Climate Measure: Structure for Colleges

<table>
<thead>
<tr>
<th>Organizational Climate</th>
<th>Measure: Structure</th>
<th>Low:</th>
</tr>
</thead>
<tbody>
<tr>
<td>High:</td>
<td>Is high when the staff feel that everyone’s job is well defined</td>
<td>Is low when they are confused who does what task and who has decision making authority</td>
</tr>
</tbody>
</table>

Summary:
This was seen as “Low” relative to this measurement standard. All participants felt that work could be better organized across the institution. They believed that a better structure for the work of the college would help employees working with someone from another part of the organization to feel that they were all working for the same college. Participants responded that this is an area for improvement.

Table 23.
Organizational Climate Measure: Standards for Colleges
<table>
<thead>
<tr>
<th><strong>Organizational Climate</strong></th>
<th><strong>Measure: Standards</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>High:</strong> Employees are always looking for ways to improve performance</td>
</tr>
</tbody>
</table>

**Support Quotations:**

This was seen as “Low” relative to this measurement standard. Participants felt colleges need to continue clarifying institutional standards in order to assist employees with their understanding of the mechanisms needed to succeed in the long term. The consensus of the participants indicated that this was an area for improvement.

---

**Table 24.**

**Organizational Climate Measure: Responsibility for Colleges**

<table>
<thead>
<tr>
<th><strong>Organizational Climate</strong></th>
<th><strong>Measure: Responsibility</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>High:</strong> Signifies that employees feel empowered to solve problems on their own</td>
</tr>
</tbody>
</table>

**Summary:**

This was seen as “High” relative to this measurement standard. Participants believed administrators, faculty and staff want to learn how to use performance data to improve their institutions. These institutions are centralizing data management responsibilities within their institutional research area and are encouraging administrators, faculty and staff to coordinate data requests with the institutional research departments.
Table 25.

Organizational Climate Measure: Recognition in Colleges

<table>
<thead>
<tr>
<th>Organizational Climate</th>
<th>Measure: Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High:</td>
</tr>
<tr>
<td></td>
<td>High recognition</td>
</tr>
<tr>
<td></td>
<td>climates are</td>
</tr>
<tr>
<td></td>
<td>characterized by an</td>
</tr>
<tr>
<td></td>
<td>appropriate balance</td>
</tr>
<tr>
<td></td>
<td>of reward and</td>
</tr>
<tr>
<td></td>
<td>criticism</td>
</tr>
<tr>
<td></td>
<td>Low:</td>
</tr>
<tr>
<td></td>
<td>Low recognition</td>
</tr>
<tr>
<td></td>
<td>means that good work</td>
</tr>
<tr>
<td></td>
<td>is inconsistently</td>
</tr>
<tr>
<td></td>
<td>rewarded</td>
</tr>
</tbody>
</table>

Support Quotations:

Participants did not share explanations for this climate dimension on the organizational culture survey. Therefore, no measurement can be assigned.

Table 26.

Organizational Climate Measure: Support in Colleges

<table>
<thead>
<tr>
<th>Organizational Climate</th>
<th>Measure: Support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High:</td>
</tr>
<tr>
<td></td>
<td>Employees feel</td>
</tr>
<tr>
<td></td>
<td>that they are</td>
</tr>
<tr>
<td></td>
<td>part of a well-</td>
</tr>
<tr>
<td></td>
<td>functioning team</td>
</tr>
<tr>
<td></td>
<td>and when they</td>
</tr>
<tr>
<td></td>
<td>sense that they</td>
</tr>
<tr>
<td></td>
<td>can get help</td>
</tr>
<tr>
<td></td>
<td>(especially from</td>
</tr>
<tr>
<td></td>
<td>the boss) if</td>
</tr>
<tr>
<td></td>
<td>they need it.</td>
</tr>
<tr>
<td></td>
<td>Low:</td>
</tr>
<tr>
<td></td>
<td>When support is</td>
</tr>
<tr>
<td></td>
<td>low, employees</td>
</tr>
<tr>
<td></td>
<td>feel isolated</td>
</tr>
<tr>
<td></td>
<td>and alone.</td>
</tr>
</tbody>
</table>

Support Quotations:

This was seen as “High” relative to this measurement standard. Participants responded that cooperation across divisions and areas of the organization is actively encouraged. They also felt when this active and continuous cooperation occurs; administrators, faculty, staff and support personal consider themselves part of larger team working for the betterment of the institution.
Table 27.

Organizational Climate Measure: Commitment in Colleges

<table>
<thead>
<tr>
<th>Organizational Climate</th>
<th>Measure: Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>High:</td>
<td>Strong feelings of commitment are associated with high levels of personal loyalty.</td>
</tr>
<tr>
<td>Low:</td>
<td>Low levels of commitment mean that employees feel apathetic toward the organization and its goals.</td>
</tr>
</tbody>
</table>

Summary:

This was seen as “High” relative to this measurement standard. In each case, participants viewed senior academic leadership and the organizational members of the colleges as processing a high level of commitment to the college. They saw the loyalty as a impetus to develop key performance indicators in order to assess institutional effectiveness and to align programs to satisfy the college’s strategic plan.

Organization Culture Defined.

In implementing a new decision management approach, such as data-driven decision-making, the institutions in this study experienced significant organizational change as they integrated strategic planning and continuous quality improvement philosophies, developed for the business sector, into a culture infused with values and norms oriented toward a higher education environment. As these institutions transitioned to become quality centric and committed to evidence-based decision making, academic leaders had to assess whether the organizational culture supported or inhibited organizational change. If it was found that the organizational culture inhibited the success of the new initiative, then it would be necessary for academic leaders to set a new course for the organization by applying specific management
approaches (i.e., team building, coaching) to encourage organizational members to recognize, adopt, and accept new values and ways of thinking.

The discourse within management and organization development literature recognizes that all organizations undergoing transitions must assess the readiness of their organizations to accept change. Each organization has a specific culture that creates a social system with unique norms and values that influence the behaviors of each organizational member and ultimately determines the degree of organizational effectiveness (Denison and Mishra, 1995; Allaire and Firshtrotu, 1984). When a new initiative is introduced to the organization, leaders must anticipate how the initiative will be received by the employees. The initiation of purposeful tactics to ensure the initiative will be successfully implemented can ultimately facilitate the dissemination of new norms and values as well as the cultivation of new behaviors. In essence, the direct involvement of organizational leaders in the change process establishes a supportive climate that leads to the diffusion of the initiative throughout the organization.

This study utilized the research of Robert Stringer (2002), an organizational development scholar who explored the relationship of organizational climate within the change process, to identify the decisions and activities utilized by the presidents and their senior leadership teams to support the integration of data-driven decision-making in their institutions. One of the principal components cited by Stringer for establishing organizational readiness for change was organizational culture. Thus, for this study it was important to include a formal model that could be used to identify the cultural characteristics present in the participating community colleges and incorporate these findings into an assessment of the organizational climate established by the college president and senior academic team to bolster integration of DDDM into the community
college culture. To address this need, the Competing Values Framework (CVF) was adopted as the model to describe the culture types found at the participating colleges.

The Competing Values Framework was selected as the preferred choice because the framework has been extensively used in research studies of institutions in the business and higher education sectors where the model has been empirically validated as a tool to identify the cultural traits found within an institution. Notably, Kim Cameron, David Whetten, John Smart and Russell Hamm have conducted several relevant studies confirming the applicability of the tool for assessing the organizational dynamics of institutions of higher education, including community colleges (Cameron and Whetten, 1984; Smart and Hamm, 1992; Cameron and Smart, 1998; Smart, 2002). The studies completed by Kim Cameron and others examined the relationship between culture, leadership practices and organizational effectiveness to address the dearth of empirical research on this subject in higher education literature.

The collection of empirical studies on culture and effectiveness in higher education and 2-year colleges by Kim Cameron and others demonstrated that culture can be studied in higher education institutions as an integral component of the organization adaptation process and that culture can be linked to specific management practices to serve as predictors of organizational performance and institutional effectiveness. Furthermore, these studies documented the usability of CVF for assessing culture and organizational effectiveness in 2-year colleges.

The Competing Value Framework (CVF) has four quadrants with basic assumptions and values illustrative of an organization’s culture: Clan (collaborate), Adhocracy (create), Hierarchy (control), and Market (compete). In turn, these four quadrants represent opposite or competing assumptions about the core values upon which organizations are evaluated by their constituents.
regarding organizational effectiveness. The model is composed of overlapping continuum ranges that indicate on one axis an internal orientation and on the other an external orientation. The internal dimension differentiates the extent management attention is directed toward strengthening internal processes (team building and communication) in contrast to efforts to deliver services that differentiate them from other organizations providing similar services. The intersection of research studies by Cameron and others led to the development of an enhanced expanded model that depicted in greater detail the intersection of all four culture types, management orientation and institutional effectiveness. Figure 18 illustrates the enhanced CVF model and shows the four culture types, management practices and the corresponding theories of institutional effectiveness.

The research of Cameron and other scholars established an important link between organizational culture and management practices that advance research into organizational development within community colleges. The enhance model incorporates culture, leadership and organizational effectiveness into a single model integrating vertical quadrants and horizontal descriptive frames; thus making it an appropriate tool for data display. Each quadrant and frame identifies a specific descriptive attribute for culture, management orientation, value drivers and leadership type (Cameron, 2009).
Figure 18. The Competing Values Framework: For Culture, Leadership, Effectiveness and Value Drivers

<table>
<thead>
<tr>
<th>Long-term Change</th>
<th>Individuality Flexibility</th>
<th>New Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Culture Type:</strong></td>
<td><strong>CLAN</strong></td>
<td><strong>ADHOCRACY</strong></td>
</tr>
<tr>
<td><strong>Orientation:</strong></td>
<td><strong>COLLABORATE</strong></td>
<td><strong>CREATE</strong></td>
</tr>
<tr>
<td><strong>Leader Type:</strong></td>
<td>Facilitator, Mentor, Team Builder</td>
<td>Innovator, Entrepreneur, Visionary</td>
</tr>
<tr>
<td><strong>Value Drivers:</strong></td>
<td>Commitment, Communication, Development</td>
<td>Innovative outputs, Transformation, Agility</td>
</tr>
<tr>
<td><strong>Theory of Effectiveness:</strong></td>
<td>Human Development and high commitment to produce effectiveness.</td>
<td>Innovativeness, vision, and constant change to produce effectiveness.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal Maintenance</th>
<th>External Positioning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Culture Type:</strong></td>
<td><strong>HIERARCHY</strong></td>
</tr>
<tr>
<td><strong>Orientation:</strong></td>
<td><strong>CONTROL</strong></td>
</tr>
<tr>
<td><strong>Leader Type:</strong></td>
<td>Coordinator, Monitor, Organizer</td>
</tr>
<tr>
<td><strong>Value Drivers:</strong></td>
<td>Efficiency, Timeliness, Consistency &amp; Uniformity</td>
</tr>
<tr>
<td><strong>Theory of Effectiveness:</strong></td>
<td>Control and efficiency with capable processes to produce effectiveness.</td>
</tr>
</tbody>
</table>

**Note:** Competing Values Framework Illustrating Perception of Study Participants Reflecting the Culture of their Community College Cameron (2009, p. 4)
Figure 18 summarizes the findings of Cameron (2009) and others into a single chart organized into four quadrants. Each quadrant is labeled by culture type and is sub-divided into several frames. The frames are: (a) *organizational orientation* which describes the level of interaction between individual and groups within the college; (b) *leader type* which characterizes the leader style or system present within the organization; (c) *value drivers* are intrinsic goals of the organization; and (d) *theory of effectiveness* describes the approach the organization pursues to achieve organizational performance objectives. The CVF frames used collectively provide a holistic and descriptive profile of the organization under examination.

Each descriptor shown in the individual frames were used as filters in NVivo 8 to systematically examine all data files. The results assembled from the various data sources led to the creation of a unique profile for each college. The profile captures specific elements of the organizational culture found at each college and offers perspectives of the management approaches as seen through the eyes of each participant. The benefit of the profile is the insight provided of a critical element within the organizational system that is solely responsible for the behavioral responses to organizational change.

Having an understanding of how their organization’s culture conforms to specific management stimuli and organization change, enables higher education leaders to observe and assess whether the organizational culture is supporting or limiting the implementation of new strategic initiatives. This feedback is vital to the college’s leadership team as they are charged with establishing the organizational climate needed to move the organizational to a new future-state. They are empowered, by position; to reconfigure the organization communicate new organizational priorities to build consensus among organizational employees that would sustain the integration of new initiatives; such as, data-driven decision-making.
Figure 19 shows the placement of each college in the study onto the CVF guide. Instead of consolidating the results into a single icon for each college, the illustration disaggregates the findings and shows representation for each of the study’s eight participants. Furthermore, the illustration also presents the differences in perspectives between participates at the same college. Displaying the findings in this manner, reveals, how perspectives may vary between individuals even within the same organization. If the variation in perspectives is found to be significant throughout the institution, thus inhibiting consensus, academic leaders may find themselves customizing their management approaches to influence the organizational culture to support any future initiatives.
College A and College C had the longest tenure as Academic Quality Improvement Program (AQIP) colleges with ten (10) and eight (8) years, respectively, while College B had the fewest number of years (five (5) years). One of the generally accepted benefits for involvement in the AQIP was the infusion of continuous improvement principles into the organizational culture which in turn facilitated collaboration leading to the development of mechanisms, processes, and procedures to better achieve stated mission outcomes. Because the design of the program is to build a commitment among all employees to enhancing organizational effectiveness, it is expected that the longer a college participates in AQIP, the more likely the organizational culture will evolve and adopt organizational orientations of collaboration and creativity. An evaluation of the findings revealed that one of the colleges did not corroborate this assumption primarily because of several organizational realignments that have occurred.

College A (small college) had the longest tenure in the Academic Quality Improvement Program; however, during its 10 year tenure as an AQIP participant, College A consolidated its campus with a smaller academic institution. It also went through a multi-year period (approximately five-years) of high personnel attrition among faculty and administrators. Thus, this period was marked by adjustments in strategic priorities; including organizational structure, management roles and responsibilities. It was not until after the merger activities were completed could the college once again fully engage in the Academic Quality Improvement Program. Over the last two years the institution has been able to refocus efforts on implementing the AQIP and building the capabilities of the employees to perform data-driven decision-making.
As a result of the organizational changes that have taken place at College A, the senior academic leaders have managed the college with a top-down approach as evidence from the responses given by the senior administrator and faculty member as they described their organizational culture. Both participants from College A described their institution as having a current proclivity toward a hierarchical environment (Figure 19). The senior administrator stressed that the organization was passing through a period of restructuring. The school spent a significant amount of time on coordination where the emphasis was on achieving consensus among organizational members to support the data-driven decision making initiative. P1SACA expressed that,

…most faculty and most staff and administrators would all agree we’ve got a lot of data, we’ve got to use it to make good decisions because we got competitors… We’ve got to make good decisions with the resources we have, I think we have consensus on that. And consensus doesn’t mean 100%, but it’s consensus, so I think we’re there.

The institution (College A) has been focused on inculcating the concepts of continuous process improvement and evidence-based decision making by establishing a new Assessment Committee to develop key performance indicators and conducting faculty and staff workshops to communicate the new roles and responsibilities. These actions have been taken to specifically address the information gaps that exist presently due to the personnel turnover that occurred during the merger. The institution is still in the early stages of organizational development with regards to data-driven decision-making as senior administration works to expand communication to all ranks in the institution. For instance, the faculty member at College A, P2FRCA, expressed that,
…from the administration standpoint, they’re the ones that are doing the collection of the data, and they may be analyzing the data some,…the data that we would get was just posted on our internet and you could get to it if you wanted to. Specific committee would grab some data, but it didn’t seem to be a real defined process that we are supposed to be using this data. Now we’re defining those processes and saying what committee, what group should be using what data to measure…

Senior administrators are aware of the challenges before them and Participant, PISACA, described the incremental steps being taken to encourage organizational development that will move the institution from the hierarchy quadrant to the Clan quadrant. He added,

From 2002 to 2008, the activity was actually teaching the world, the new environment, the language and the techniques around strategic planning, and now that we’ve learned that, we now have this thing called data that we’re now going to use to support our strategic planning activities. We had never really connected them before, and we’re finally connecting them.

The literature implies that a hierarchy culture type organization seeks first stability in its orientation before moving to the high-ordered stage of a Clan culture which emphasizes more collaboration and teaming. Thus, these findings from College A suggest that the college may need to invest additional resources and administrative effort to enhance the readiness within the college to continue progressing toward a data-driven decision-making environment.

In contrast to College A, the majority of the comments for College B (youngest tenure in AQIP at 5 years) expressed that the college showed a commitment to continuous process improvement and its’ cultural orientation was collaborative. The Senior Administrator at College B stated,

The entire college recognizes the importance of building collaborative relationships. Systematic and comprehensive processes are developed by different divisions/departments to enhance information sharing, best practices and recognize state-wide trends in workforce development, student services and regional development.
College B was able to devote their resources to integrating the conceptual elements of AQIP into their management approaches without interruption. Consequently, the college has benefited from the collaboration that has been achieved among its’ employees. The three participants at College B identified the culture types as Hierarchy, Clan and Adhocracy. Having differences of opinion is not a major area of concern, instead it signals to change agents responsible for managing the organization’s transition that there are organization members identifying areas that need additional attention before the initiative achieves its intended outcomes. Having contrasting views within the same organization is symbolic of an organization undergoing transformative change for it encompasses all of the organizational components (labor, financial resources and physical resources) involved in strategic change. As the organization migrates to a new status, organizational members will have varying perceptions of the organization’s cultural orientations until it establishes equilibrium or a steady-state.

The senior administrator, P3SACB, described the college type as Clan and spoke of the organization’s commitment to a quality mindset and the permeation of this philosophy throughout each level of the organization. The administrator stated,

...I think there are cultural changes going on. I think one of the things that we look for, as we hire new people, is for people that are going to support this mindset. I mean, we talk about quality. We talk about how continuous quality improvement is what we are trying to do.

The faculty representative, P5FRCB, identified the college environment as Adhocracy. They described the culture as being more fluid and responsive and stated, “we have a more continuous process now, rather than the on and off process we had before. It isn’t ignored until we have to see it again and then forget about it until it comes up again”.
However, the mid-level administrator, P4DACB viewed the college as a Hierarchy type still wed to a provincial mind-set centered on localized departmental control of information. They stated,

…higher education is really a committee-driven, similar to a silo, but it’s sort of a unit-driven organization where people think of their work in kind of discrete units…And so getting out of that kind of provincial unit-based way of looking at problem-solving I think is probably a barrier.

The collective opinions of the participants from College C (tenure in AQIP 8 years, largest college) stated,

The last reorganization…was specifically designed to foster collaboration and promote better communication across the institution. The major mechanism for fostering internal relationships remains cross-functional work teams. Each team is created with a balance of administrative, faculty and support staff personnel.

The senior administrator described an ever changing environment where the college has utilized teaming to improve data management and has adopted statistical analysis techniques (i.e. Six Sigma) to aid decision makers in becoming innovative in improving the efficiency and effectiveness of work processes. The mid-level administrator also perceived the environment falling within quadrant 1 (Clan) and expressed that the environment is a team culture. He purported,

I would say it’s slightly bureaucratic, becoming more teaming. It is building momentum, and more people are getting their hands around it, participating and helping. There’s still a lot of people on the outside looking in, waiting to see how it gets adopted and by who, and how they make use of that data. But it is building momentum towards a teaming environment. It’s much more teaming than bureaucratic at this point.

Lastly, the faculty representative expressed that the organization was experiencing a period of great change and thus fell into the quadrant two (2) (Adhocracy). She stated,

And we’re still looking at our business processes. We have a whole new group of people in here who are helping us to look at our business processes, so we’re still going through major change. And then we might go for a referendum to get money to expand the college even more. So I think it’s really fun. I love it. Change only helps to make you better.
Previous research findings have described organizations with clan and adhocracy culture types as possessing norms and values that “foster affiliation, encourage member participation in decision making, emphasize talent development, assume change is inevitable and individuals are motivated by the importance and ideological appeal of the tasks to be addressed” (Smart, Kuh and Tierney, p. 148). Applying these research findings to the findings of this study, indicate that College C is establishing an organizational climate to facilitate the integration of data-driven decision-making practices into the decision matrix of the college. Further, the majority of the respondents reported that the institution supported transformative change.

Comparing the findings of the three colleges, the results indicate that each institution is progressing along the continuum of organizational development toward a culture of evidence. The pace of change is independent of size and time involved in the Academic Quality Improvement Program (AQIP), but is positively influenced by organizational culture orientation. As evidenced by the progress made by College C, College C (in AQIP 8 years) has built an organization that has embraced DDDM and continues to integrate and develop continuous process improvement strategies to improve organizational effectiveness by utilizing operational data to inform decisions.
Knowledge Management Capability Findings

The study findings identify the successes and challenges encountered by the campuses as they established new processes for managing data to support decision making. To assist with the analysis of the data regarding knowledge management capabilities for the three colleges in the study, the data management analysis framework developed by the Ikemoto and Marsh (2007) was employed. The framework uses seven dimensions for assessing the quality of an organization’s data management process: (1) accessibility and timeliness of data; (2) perceived validity of influenced data; (3) staff capacity and support; (4) time; (5) partnerships with external organizations; (6) tools; and (7) organizational culture and leadership. The Ikemoto and Marsh framework was used to analyze relevant information from interview transcripts, internal documents and reports that fully described the data management and reporting capabilities found at each of the study’s community colleges.

Upon application of the framework to data gathered, it was found all three colleges shared three similar substantive challenges which serve as barriers to using data and information for making decisions. These challenges were either tied to the following: a) volume of data collected; b) the ability to retrieve (accessibility and timeliness) of needed information; and c) the cognitive gaps which exist among organizational members regarding their ability to analyze and interpret the data. Though these difficulties varied greatly between the colleges, it was strongly apparent these three issues influenced how and in what ways information was used to guide decisions and develop strategies for enhancing organizational effectiveness.

Clearly, all the colleges are experiencing substantive challenges managing and interpreting the data. The larger two colleges, College B and College C, collected large volumes of data from across the college relying on a robust data infrastructure to support data collection
and retrieval. In comparison, the smaller College A collected far less organizational data and information and instead, relied on data from third parties to provide needed information particularly regarding program and organizational performance.

There is no doubt a specific skill-set is required to retrieve the data in a timely manner and to analyze the data in order to identify cause-and-effect relationships or relevant trends from the collected data. There was a common belief among participants that many administrators, faculty and staff were deficient in the ability to retrieve the data and did not possess the required analytical skills. Quoting the senior administrator from College A, P1SACA states,

You almost have to get to that plateau of going from no data or little data to lots of data before you can then say, okay, it’s great that we have a lots of data, but we’re really not using it. I mean, we have to make a decision, are we going to continue collecting this? Because, just collecting it to collect it isn’t helping us.

The Dean from College C, P7DACC, concurred and expressed “…that the biggest barrier that the college has faced, the whole infrastructure, collecting the data, and then how do we start reporting that out and getting people trained so they can query their own data”.

Lastly, the faculty representative from College B, P5FRCB, described the barrier which interfered with organizational members’ ability to utilized data well, as a skill gap that must be addressed if the college is to successfully implement data-driven decision-making. They stated,

The big issue is how to get data here. And the other thing is that we’re not very good at interpreting data. I think that’s another thing, that we’re so new to really using data to make decisions that we’re not all that good at interpreting it yet.

Interestingly, an emergent theme not placed within the Ikemoto & Marsh did arise from the data. Participants shared an additional challenging barrier to effective and efficient decision making within their colleges. This barrier was departmental “silo” mentality. They felt it was this maintenance of the departmental “silo” that stymied and even stopped the flow and sharing of data between departments. They strongly believed because of this barrier, data and
information was not always made available to administrative leaders responsible for the general oversight of those departments or areas which therefore, weakened effective decision making.

Participant P4DACB expressed this concern very succinctly by stating,

One barrier that I don’t think is ever going to go away is that the culture of higher education is really a committee-driven. I mean, you used the word silo, but it’s sort of a unit-driven organization where people think of their work in kind of discrete units. And they are not necessarily looking at the whole.

Overcoming divisional boundaries will be a key consideration for all colleges, if they are to establish a climate that supports college-wide collaborative behaviors required to effectively integrate data-driven decision-making principles.

Summary

In this chapter, a summary of data collection methodology and protocols was presented along with demographic information gathered of the study’s participating colleges. The demographic information was organized in several data displays. The primary instruments used to collect data for this study were face-to-face interviews and an organizational culture survey. These data collection instruments were supplemented by the collection and review of AQIP reports.

All collected data was stored in a computerized database and rigorously analyzed utilized NVivo 8 analytical software. The resulting findings were captured in data display tables and illustrations. Descriptive narratives were prepared for each table and illustration. The narratives provided comprehensive explanations of the findings emerging from the study regarding the organizational climate present at the study’s participating community colleges, the pace of organizational development as the community colleges moved toward a data-driven decision making culture and their overall knowledge management capabilities.
Chapter 5 - Data Analysis

Introduction

The objective of the analysis is to extract significance and interpret the meaning of the data and information gathered in this study. The data garnered from multiple data sources is analyzed by the a priori themes identified in the study’s conceptual framework: leadership, knowledge management and organizational climate. The findings emerging from the data analysis provides an in-depth understanding of the three participating colleges currently engaged in data-driven decision-making to enhance their specific institutional effectiveness.

Semi-structured interviews were administered to gain insights of the participants’ perceptions and opinions of the data-driven decision-making processes and procedures currently in place. In addition, questions were asked to learn about the organizational climate created by the academic leaders to sustain the pursuit of institutional effectiveness within each community college. Rigorous collection and analysis protocols supported this iterative analysis process and ensured the trustworthiness and validity of the findings.

Data Analysis Review

Analysis of the data is divided into two sections. The first section is comprised of two parts: (1) the individual participant responses correlated to primary themes as elicited by the interview questions, and (2) participant quotations supporting the themes. The second section is an analysis of the aggregate information and data by the three a priori themes: leadership, knowledge management and organizational climate.
Interview Question #1: *What were the reasons your college adopted AQIP as a means for enhancing institutional effectiveness?*

Two reasons were cited most often by the study participants for adopting Academic Quality Improvement Program (AQIP) as a strategy for enhancing institutional effectiveness. The first reason was that the president and senior administrators, due to their previous experiences with using total quality techniques in the corporate work place or at other colleges, found that AQIP’s use of continuous improvement principles beneficial in helping their colleges improve institutional effectiveness. Secondly, the senior administrators viewed AQIP as a preferred alternative to Program to Evaluate and Advance Quality (PEAQ), because of its’ approach toward engaging the entire college in process improvement and its’ emphasis on ongoing feedback to help the college stay on target toward achieving their strategic goals. Table 28 displays the reasons cited by study participants for moving from PEAQ to AQIP.

Table 28.

Interview Question #1 Reasons for College Becoming Members of AQIP

<table>
<thead>
<tr>
<th>Primary Themes</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
<th>P8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous quality improvement experience among senior administrators</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AQIP offered new tactics for improving overall college performance</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

The participants expressed that the values of total quality management and continuous process improvement resonated among the senior administrators of the institutions, in particular
the college presidents. They emphasized that support was high among the college presidents to put into practice these concepts within their community colleges. Common among the participants was the belief that it was their college president’s expertise and commitment to continuous quality improvement which was instrumental in moving the community college into AQIP. Further, the participants expressed their conviction that their college president viewed the structure contained within the AQIP as affording the college a formal training regimen to equip academic leaders, faculty and staff with an understanding of continuous quality management, systems analysis, data management and institutional effectiveness principles. With these formal mechanisms in place, the colleges are able to initiate the transition to a new management approach; an approach that would prepare their employees to measure operational performance and ultimately provide information that could inform the development of strategies for improving institutional effectiveness.

The participants also indicated that the acceptance of AQIP was accelerated in their institutions because many in senior administrative leadership and faculty had strong familiarity with the core principles of AQIP and continuous process improvement. In addition, AQIP afforded the colleges the opportunity to put in place a systematic approach to increase the use of evidence-based decision-making. Some participants also felt AQIP offers colleges an opportunity to engage administrators, faculty and staff in a process that encouraged the entire organization to participate in finding solutions to college challenges. Table 29 illustrates some of the common comments regarding AQIP’s alignment to the backgrounds of the college’s personnel.
Participant Quotes Supporting the AQIP alignment to the backgrounds of the college’s personnel

<table>
<thead>
<tr>
<th>Participant</th>
<th>Quote</th>
</tr>
</thead>
</table>
| P3SACB      | “…the new president at that time…His background was in quality. He had a business background. His vocational education background was very heavy in the quality area. He worked in the business world in quality for a period of time, and so to him AQIP made logical sense”.

P6SACC | “the part that connected in community colleges, I think, was the part of quality improvement that involves collaboration and teamwork. And so both at my former college and at this one, when I came here, what they kind of took out of that earlier training was that we need to involve people, you need to get input from the grassroots level…So this seem to be a way to get accreditation accomplished and actually to involve people”.

A second reason presented by the participants was that AQIP offered new tactics relative to PEAQ for improving overall college performance. The participants were of the opinion that the traditional seven to ten year duration between PEAQ reaccreditation visits created a scenario whereby employees lose interest in continuing quality improvement initiatives as needed for organizational improvement. Consequently, the college did not proactively engage in organizational quality improvement endeavors until time close to the next scheduled accreditation visit. Participant P5FACB, shared this typical feeling regarding PEAQ stating,

…the whole school went into turmoil, and everything was directed, for a couple of years, at accreditation. And then we stopped again for another seven years before we started all over again. And the idea that this [AQIP] would not be a burst, pause, burst, pause was very attractive.

Participants saw AQIP as providing a formal platform for the colleges to continually leverage both employee knowledge and expertise and continuous quality improvement efforts to address shifting college issues and challenges. Table 30 illustrates the common respondent’s
I responses regarding the reasons the colleges adopted AQIP as a means for enhancing institutional effectiveness.

Table 30.
Reasons for moving from PEAQ to AQIP

<table>
<thead>
<tr>
<th></th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1SACA</td>
<td>“we were due for another PEAQ visit and so that fed into it, that do we really want to gear up and do this PEAQ visit again where the old adage, the model goes on the shelf and you work hard for a year, and then nothing really comes from it. It didn’t seem like the right fit for our culture at the time”.</td>
</tr>
<tr>
<td>P5FRCB</td>
<td>“at least for me, and I think many other faculty, the idea that we could do program evaluation for a real purpose, where it might actually get used, as opposed to fill file cabinets, which is what had often happened in the past”</td>
</tr>
<tr>
<td>P7DACC</td>
<td>“At the time, there were a number of people who had been at the college for a long time, and when you’re at a college for a long time, you tend to make decisions based on experiential evidence or gut reaction. The college wanted to insure that it was preparing to move forward in the proper and appropriate ways, and to do that, the institution decided it needed a little bit more evidence-based type practice…So the move to AQIP definitely set the groundwork and the framework around being able to put the mechanisms in place to start making some of those decisions”</td>
</tr>
</tbody>
</table>

All of the comments presented in Table 8 coalesce around the conclusion that PEAQ did not fulfill the emerging need for a continuous evaluative process that would generate relevant data and serve as criteria for developing initiatives or selecting between strategic alternatives. AQIP offered the colleges an opportunity to engage administrators, faculty and staff in a process that encouraged the entire organization to participate in finding solutions for enhancing the delivery of services to their constituents in real-time.
Therefore, it was felt by these study participants that AQIP brings to the colleges management principles that assists them with self-assessment and strategic planning approaches to enable colleges to develop tactics for improving overall college performance. Interestingly, some participants even viewed AQIP as assisting to build cohesion among college employees by improving the dissemination of performance information thus understanding of the decisions made to all levels of the college.

**Interview Question # 2:** Who were the architects and champions that planned and implemented AQIP at your college?

All but one of the participants identified the college president as the architect or champion that led the effort to implement the AQIP. The proponents believed that the Program fostered institutional alignment of continuous improvement initiatives and projects with the required accreditation process. This response was expected since it is by the guidance and position of president that the course and mission the college is set.

Only one participant stated that there was not an individual champion that guided and facilitated the organizational move to AQIP, but instead the transformation was led by an AQIP cross-functional steering committee. This participant was a senior administrator and acknowledged the important role of the president, but saw their role as minimal due to the fact that the president delegated the responsibility for implementation to the cross-functional team. Surprisingly, this participant did not view the decision by the president to pursue AQIP as key to the college’s move to transition from PEAQ to AQIP. Table 31 highlights a few of the comments given regarding the identity of the architects who were responsible for introducing and managing the integration of AQIP into the colleges.
Table 31.

Representative Quotes Identifying the Architects and/or Champion of the Colleges’ Transition from PEAQ to AQIP

<table>
<thead>
<tr>
<th>College</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1SACA</td>
<td>“…So we liked hearing that AQIP had the educational focus, and yet the continuous quality improvement, and it seemed like a good fit coming off some of our workshops and efforts that we’d had for faculty and staff with TQM. So that president brought us into it…”</td>
</tr>
<tr>
<td>P5FRCB</td>
<td>“I think the most honest first reason [our college adopted AQIP as a means for enhancing institutional effectiveness] is because the president wanted to explore it, and so he suggested it and held meetings with people around campus who thought it would be a good idea”.</td>
</tr>
<tr>
<td>P6SACC</td>
<td>“..we had an AQIP steering team that I led…it was my responsibility to launch it….The cross functional group launched our first discussions and our first activity was called the Vital Focus Process”.”</td>
</tr>
</tbody>
</table>

**Interview Question # 3:** How did the organizational structure change as a result?

Transitioning to AQIP resulted in organizational realignment for all three colleges. All three colleges either formed new departments focused on institutional effectiveness and assessment or added new senior level positions to their Institutional Research department.

Table 32 highlights the changes made to the organizational structure at each college.
Table 32.

Resulting organizational structural change following adoption of AQIP

<table>
<thead>
<tr>
<th>Emergent Themes</th>
<th>Participant Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Added Institutional Effectiveness Committee</td>
<td>X</td>
</tr>
<tr>
<td>Added Institutional Researcher Position and a Grants Development Position</td>
<td>X</td>
</tr>
<tr>
<td>Added Executive Dean of Research &amp; Planning and Quality</td>
<td>X</td>
</tr>
<tr>
<td>Created a new Institutional Research Department</td>
<td>X</td>
</tr>
<tr>
<td>Established a Lead responsible for Strategic Planning</td>
<td>X</td>
</tr>
<tr>
<td>Established a lead for operations</td>
<td>X</td>
</tr>
<tr>
<td>No Visible organizational change</td>
<td>X</td>
</tr>
</tbody>
</table>

The purpose of these new departments or positions was to put in place formal leaders that would have authority and responsibility for managing the integration of data-driven decision-making practices within each institution. Long term, in addition to the coordination responsibilities, the new position leaders focused on managing new committees charged with the integration of new work processes to measure institutional effectiveness and coordinate future process improvement projects. What was clear from the number of changes occurring at the senior administrative level was the recognition that a successful transition to the AQIP depended on establishing senior level positions and targeted committees that would focus solely on the entire transformation process.

College A (Small sized) added a committee and positions specifically organized to develop key performance indicators and work processes to gather and analyze information. The
college has relied on data from outside organizations; such as, NCCBP to reference their college’s performance. The intent was to use this information to develop internal data standards that could be used to evaluate the performance of College A in the future. Participant, P1SACA, explained how the third party data would be used and the role of the Institutional Effectiveness Committee:

Through data-driven decision-making, we’ve had to have...we had an Assessment Committee that helped us make some decisions on which instruments would get us the data we needed to know about our students. Probably in the mid-2000s, 2003, 2004, that committee helped us decide on starting to be a member of CCSSE, starting to be a member of the National Community College Benchmark Project. We decided to do the AQIP examiner to get a sense for what our internal people thought of our quality improvement. We have an Institutional Effectiveness Committee that ensures that the minutes go out to everyone so they can see what we are working on now, or what are our initiatives.

The faculty member at College A indicated that they were unaware of any organizational changes that were specifically linked to the transition to AQIP. This comment was unexpected given that the college made a number of administrative changes following a merger that occurred in the early years of the decade ending in 2010. The senior administrator at the college did indicate that several of the administrative and organizational changes were implemented to support data-driven decision-making activities throughout the campus. However, while the senior administrative team understood how these organizational changes would favor a data-driven environment, the comments from the faculty representative indicate that additional steps should be taken to communicate to all faculty and staff how these organizational changes will benefit the college efforts to integrate continuous quality improvement and data-driven decision making.

College B (Medium sized) created several positions including the Executive Dean of Research Planning and Quality, a new Institutional Research Department and a new position of
Professional Development to improve data management, specifically targeting data storage and queries. The senior administrator shared the following:

I think out of our three action projects I added another position, … an Executive Dean of Professional Development. That was one of the AQIP action projects. So I sat on it while the group went through their process, and sure enough, they came down to the end and they said, well, there needs to be somebody to lead professional development at the college.

College C (Large sized) expanded their college council to better manage AQIP action projects and to establish better communications and data integrity between administrators, departments and the technologist located in the Institutional Research department responsible for data management. Senior Administrator, P6SACC, expressed,

The problem, I think, structurally, with…this is one thing. But it’s also working with your technology people, and in community colleges there’s historically this chasm of communication between your tech services or your IT people and what we call your functional people that do service. An so, it’s not structure from identifying the vice president position standpoint, but it is structure in terms of it’s easy for a college to say they believe in data, but somehow they have to find the data. And we have a lot of data, but it doesn’t come out of our systems very easily. And so I think maybe four-year, more research-oriented colleges are better at this, I don’t know, but this college implemented PeopleSoft just prior to me coming, and they did it with, like, no conversation with the data people.

So the data that my folks used to get out of the old legacy system when they plugged in PeopleSoft Enterprise, they suddenly had nothing. And so it’s taken us like eight years to make up for that. And finally I do have a person there now who came from business, actually, from banking, that understands data warehouse, data architecture, setting up the system. And now we’re hiring very expensive consultants to come in and help us set up a business intelligence system at the college.

In addition to the personnel added to improve communications between the Institutional Research department and the other functional areas, College C also added a Director of Operations to oversee standardization of work processes across the institution. The participant, P6SACC, stated the following reason for the new position.
The college hired, in December, created a new position called Director of Operations. That position, in part, is charged with trying to create a center for best practices and standardization of how the different centers through the college do what they do.

Common to all colleges was a general sentiment that each college needed to strengthen the capabilities of their Institutional Research departments. In particular they suggested that the department needed to enhance their capacities and abilities to handle the increased volume of data generated, in order to adequately respond to all the data inquiries from stakeholders.

The changes to organizational structure and roles, as described by the participants, were expected. Continuous quality improvement, when fully implemented, requires an institution-wide commitment to data-driven decision-making and collaboration across hierarchal and horizontal departmental boundaries.

Because of the need to ensure data integrity and seamless information flow, the colleges also recognized the need for professional development programs to build the acumen of their employees in the performance of data analysis and reporting. Without an organizational structure aligned to the mission and ongoing learning opportunities for employees, the colleges will not be able to perform systematic performance analysis nor measure overall institutional effectiveness. Jones (2007) emphasized the important role organizational structure serves in determining organizational behavior. He stated, “organizational structure is the formal system of task and authority relationships that control how people coordinate their actions and use resources to achieve organizational goals” (p. 7). Thus, in preparation for an organization to achieve a transformative change, as is the case of integrating DDDM into the management matrix of a community college, the college must first design and implement a new organizational structure to support the new behaviors desired.
Each alteration in structure or process represents new ideas and innovations occurring in community colleges as they strive to maintain continuous quality improvement initiatives in order to better serve their students and stakeholders. Levine (2001) describes the innovation that is occurring today; succinctly, as “a departure from traditional organization practices. The innovation and the host organization have at least a somewhat different set of goals, norms and values, and as a result, a differing set of boundaries” (p.13). Several organizational changes were reported by the participants at all the colleges. All the changes reported by the institutions were done to manage the integration of the Academic Quality Improvement Program and improve data management and dissemination.

**Interview Question# 4:** *What are the processes or procedures that have been critical in facilitating the organization’s implementation of data-driven decision-making?*

Interestingly, this question generated and opposing respondent responses, from the same institution regarding the extent new processes have been integrated in to the organization; either the respondent did or did not know of any new processes implemented. Several respondents stated that they were unaware of any specific processes or procedures supporting data-driven decision-making. Participants may not have been aware of any process or procedural changes possibly due to the fact that these organizational members were not directly involve in developing new work processes for the college. However, there was evidence in the AQIP Systems Appraisal reports that new processes for improving decision making were implemented.

There was a consensus among those who observed a distinctive change in the way the organization was approaching problem solving by encouraging the use of new decision making models. Some participants indicated their institutions were applying the quality improvement
techniques known as Six Sigma’s DMAIC and the Plan-Do-Check-Act (PDCA) methodologies. These participants were knowledgeable of the application of these techniques because they had direct involvement in training others in their use or supervised organizational members who had been trained in Six Sigma and were responsible for identifying areas of improvement for the college. The data presentation shown in Table 33 presents the responses received to Question 4.

Table 33.
Processes or procedures supporting data-driven decision-making

<table>
<thead>
<tr>
<th>Emergent Themes</th>
<th>Participant Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not aware of any specific new processes</td>
<td>X   X   X   X</td>
</tr>
<tr>
<td>Established a formal data-driven decision making model</td>
<td>X   X   X   X</td>
</tr>
</tbody>
</table>

PDCA is similar to Six Sigma’s DMAIC which represents a structured quality management approach that strives to “reduce variation in organizational processes by using improvement specialists [internal or external personnel trained in the methodology], a structured method, and performance metrics with the aim of achieving strategic direction” (Schroeder, Linderman, Liedtke and Choo, 2007, p. 5). Both methods are used to move an organization forward toward an evidence-based environment. Table 34 presents comments from the participants regarding the use of the PDCA and Six Sigma DMAIC models to support data-driven decision making. These models are situating the community colleges to better handle the flow of data to support the development of the strategic plan, assist with daily operations, as well as assist the college with the development of quality tools.
Table 34.

Approaches used to support Data-Driven Decision-Making

<table>
<thead>
<tr>
<th>Participant</th>
<th>Supporting Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1SACA</td>
<td>“[With] Plan-Do-Check-Act (PDCA), we reinvigorated our quality tools...we’re doing our strategic plan, which we’re going to call a strategic agenda. And a part of that is going to be determining are we going to have key performance indicators, are we going to have a dashboard...”</td>
</tr>
<tr>
<td>P4DACB</td>
<td>“What we’ve done since ’98 is to maintain a data warehouse where we take snapshots from the transactional database so we can do longitudinal reporting backwards for trends and stuff.... use that kind of reporting to drive decisions about where we add sections, where we do recruiting efforts, those kind of things”.</td>
</tr>
<tr>
<td>P8FRCC</td>
<td>“...through the mapping process, through Six Sigma, because part of Six Sigma is getting data, it’s all about real support there for getting people data to make decisions...DMAIC is the process. It’s a five step process to attack problems, and the process is called DMAIC. And then this is what it means: Define the problem, Measure the defects, Analyze the data, Improve the process, and then Control the process”.</td>
</tr>
</tbody>
</table>

**Interview Question #5:** What were the barriers encountered as the college moved to AQIP to enhance institutional effectiveness?

This question generated numerous responses that spoke to the challenges facing the community colleges as the institutions moved to the AQIP to enhance institutional effectiveness. There was no clear consensus regarding the specific barriers impinging on the implementation of the AQIP. The participants spoke of deficits in several areas including: a) lack of a defined process; b) need for additional professional development programs; c) uncertainty regarding the accreditation requirements under AQIP; d) insufficient funding and resources; and e) supporting infrastructure deficiencies and organizational culture. Table 35 presents several of the barriers identified by the participants.
Table 35.

Barriers encountered as the college moved to AQIP to enhance institutional effectiveness

Resulting organizational structural change following adoption of AQIP

<table>
<thead>
<tr>
<th>Emergent Themes</th>
<th>Participant Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of a defined data management process</td>
<td>X</td>
</tr>
<tr>
<td>Need for professional development</td>
<td></td>
</tr>
<tr>
<td>Uncertainty regarding the accreditation requirements</td>
<td>X X</td>
</tr>
<tr>
<td>Supporting infrastructure deficiencies (getting data out of the system to perform analysis)</td>
<td>X</td>
</tr>
<tr>
<td>Organizational culture (organization is not fully incorporating the collaborative decision making process as emphasized by AQIP processes, but is still wedded to unit-level decision making)</td>
<td>X X X</td>
</tr>
<tr>
<td>Insufficient funding to acquire technical support to build and maintain databases</td>
<td>X X</td>
</tr>
</tbody>
</table>

Table 36 matches specific participant comments to each of the barriers identified by the participants.

Table 36.

Participant comments and identified barriers encountered as the college moved to AQIP

<table>
<thead>
<tr>
<th>Participant</th>
<th>Theme</th>
<th>Supporting Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1SACA</td>
<td>Not having a clear process that included a control or feedback loop to confirm progress</td>
<td>“We’ve done some things well, but closing the loop was not something we were doing well, and so we needed that model PDCA. And so that was a model of institutional effectiveness that was started in the fall”.</td>
</tr>
<tr>
<td><strong>P3SACB</strong></td>
<td>Different interpretations of the new accreditation process and resultant outcomes between organizational levels</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“…you almost have to get to that plateau of going from no data or little data to lots of data before you can then say, okay, it’s great that we have lots of data, but we’re really not using it. I mean, we have to make a decision, are we going to continue collecting this? Because just collecting it to collect it isn’t helping us”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P7DACC</strong></th>
<th>Infrastructure and data management training is insufficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“And one of my concerns with coming in with the AQIP program was I was afraid, from a faculty perspective, that this was, oh, okay, we’re doing that. That means we don’t have to worry about all that assessment stuff, per se, because we don’t have that ten-year review where they come in and jump all over us about assessment.…But I was very concerned that people were getting very focused on all we have to do for accreditation are these three action projects, all we have to do is this. So that’s a mental barrier. It’s not a physical barrier. It’s not anything anybody does. But it’s a mental, psyche”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P8FRCC</strong></th>
<th>Insufficient funding and resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“The barriers seem to be the technology, getting the infrastructure, getting the people in place, the systems in place to capture, store, pull up the data, the tools to use”.</td>
</tr>
</tbody>
</table>

|            | “I think it’s probably more funds and resources sometimes that really inhibit us. Nobody can get to Institutional Research. They don’t have enough people there to give us data. So finding data, getting data at this college is very difficult” |
Each barrier on their own is an enough to slow the pace of integration of the total quality and continuous improvement principles. The existence of multiple barriers will require a comparatively longer period of time or may impede the transformation of the college from a state where decisions are made on an arbitrary basis to a new state where decisions are fact based.

College A (small sized) reported that their progress has been restricted by the lack of a formal approach to data management and organizational culture. The former speaks to the college’s ability to manage data so that it can be effectively used to inform decision making. The latter raises the question of organizational readiness and ability of senior administrators to motivate the institution’s employees to develop new behaviors that will support data-driven decision-making.

College B (medium sized) participants also indicated that the college had concerns about the readiness of their culture, as well as concerns about how the employees understood the connection between accreditation standards and the Academic Quality Improvement Program. The AQIP works in conjunction with accreditation standards and is not to be managed as a standalone program. As the college integrates the AQIP processes into the college’s management processes it is expected that the college will develop standards that complement Higher Learning Commission accreditation standards and with these standards in place be able to establish measures of organizational effectiveness.
College C (large sized) participants identified four barriers and they were professional development, infrastructure, funding for hiring technique expertise familiar with database management and organizational culture. While organizational culture was mentioned as a barrier, the concerns at College C are different than at the other colleges. The transformation to a culture of evidence is supported by the employees of the college; however, the participants acknowledged that college employees still need some professional development to improve their analytical abilities to develop standards and assess the data currently being captured. Also, the college needs to improve the data management infrastructure to handle the volume of data capture, so that the data systems can support the increase in data inquiries made by the college’s departments.

Accordingly, if the infrastructure cannot support data collection, analysis or archiving, the institution will be unable to perform either data analysis or performance reporting accurately. Support in this case includes having personnel with the technical expertise to design and maintain databases to facilitate archiving and data retrieval in response to inquiries from individual managers or departments. Further, if the organization’s employees do not have a clear understanding of processes needed to perform continuous quality improvement then the institution cannot insure data integrity. In addition, if employees are allowed to make general interpretations of performance data without the aid of internally agreed upon standards, the institution will be unable to rely on the results or findings to inform decision making in order to improve overall organizational effectiveness. These significant areas of concern will be addressed in the study’s recommendations.

Participants were also asked a supplemental question to understand how data results and findings were currently communicated to the college’s stakeholders. All the colleges
disseminated performance information throughout the organization and to their external stakeholders by way of face-to-face exchanges, electronic mail, newsletters, Intranet and/or website. Notably, it was made clear from the interviews that each college understood that they had to use multiple approaches for reporting performance results to the college’s stakeholders.

Each college commented that they have a specific tool to communicate performance information to the stakeholders. The reporting format used varied greatly, either taking the form of performance scorecarding and benchmarking, general reports (such as factoids) or formal written reports to the Board of Trustees. The format chosen by the participating colleges depended on the level of experience with working with advanced communication tools such as, the balanced score card, electronic newsletters and web sites. For example, the colleges that utilized the balance scorecard format maintained robust enterprise data management systems giving them the ability to archive volumes of data; perform intricate queries; and generate reports with little interruption to daily management operations. Table 37 shows the comments on communications methods used to share organizational performance information.
Table 37.

Comments on Additional Communications Methods used to Share Organizational Performance Information

<table>
<thead>
<tr>
<th>Participant</th>
<th>Theme</th>
<th>Supporting Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2FRCA</td>
<td>Local meetings, emails and web links</td>
<td>“We’ll get an email that has a link to where it’s posted out on our intranet. It’s always available out there, you could go find it, but the email is just the notification that it’s out there, and a link to it”.</td>
</tr>
<tr>
<td>P3SACB</td>
<td>Local meetings, emails and web links</td>
<td>“…we share it through our IR area, we share it through our academic areas, our administrative areas, student services. But as far as communication, I think we use face-to-face meetings and then we use our email and our web quite a bit”.</td>
</tr>
<tr>
<td>P7DACC</td>
<td>Local meetings, emails and web links</td>
<td>“The president sends out a daily email…. It goes to the community, faculty – it might even go to students as well. Every couple of days the president make mention of different measures – enrollment went up, this went down”.</td>
</tr>
</tbody>
</table>

A common challenge cited by each college was the lack of a single performance report that summarized the college-wide operational performance into a set of commonly understood metrics or core indicators. Currently, the reporting practice consist of individualize unit or program-specific reports that support unit managers, but would not be transferable outside a department.

**Interview Question # 6:**  How does the organizational culture support or inhibit the use of AQIP and the data-driven decision making philosophy?

The participants provided several explanations of how the organizational culture supported change following the adoption of AQIP. In general, most comments given by the participants expressed that the institutions are moving toward focusing on continuous process improvement and are integrating the use of data into their strategic planning activities. Also,
they are making adjustments to improve the abilities among administrators and faculty to use
data to inform decision-making and encourage greater collaboration among college employees.
By building cross-boundary cooperation between departments, the colleges are buttressing the
transition from the traditional “silo and unit-centered” mind-set. It must be noted that a couple
of the participants indicated that the transition is not taking place without some resistance, but
the resistance was not material and did not impede the colleges from achieving their goal to
become data-driven institutions. The data presentation shown in Table 38 summarizes the
comments shared by the participants regarding how organizational culture on their campuses is
either supporting or inhibiting the integration of data-driven decision making.

Table 38.

Characteristics of How the Organizational Culture Supports or Inhibits Use of Data-Driven
Decision-making Practices

<table>
<thead>
<tr>
<th>Emergent Themes</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
<th>P8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have not achieved uniformed acceptance of how to integrate data-driven decision making</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior to today, the organization was learning the terminology of quality, now it’s data to support strategic planning</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moving the college away from being unit-driven and thinking of their work only in discrete units</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transitioning to accept business-centered practices within an academic setting</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projects are no longer stop/start, they are integrated and the college is focused on continuous improvement</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People are now starting to better decisions relative</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Not surprisingly, many employees are still wed to traditional management approaches that are less data-driven and focus on preserving unit-autonomy and consensus. Participant, P4DAB, emphasized the difficulty tradition has had on changing the college’s culture stating, getting out of that kind of provincial unit-based way of looking at problem-solving I think is probably a barrier. I think one of higher education’s greatest strengths is tradition and the things that we know have worked in the past, but it can also be a weakness sometimes when you’re trying to innovate.

Table 39 presents the comments describing the changes in organizational culture as the colleges integrated data-driven decision-making practices.

Table 39.
Comments Describing How the Organizational Culture Supports or Inhibit use of Integrated Data-driven Decision-making Practices

<table>
<thead>
<tr>
<th>Participant</th>
<th>Supporting Quotation</th>
</tr>
</thead>
</table>
| P2FRCA      | “I think the barriers were cultural”.
“I would say at the high level yes, …we have been able to achieve consensus within the organization regarding becoming data-driven decision-making organization. Not all the way through the organization …there’s so many people that will believe on faith and so many people that will believe based on what they see, and I think the people that are willing to believe on faith believe. Now we’re working on the next group, and they’re going to have to see some evidence”. |
| P3SACB      | “So let’s say up to two years ago, which would put us about 2008, prior to that you already were AQIP, would you say from that time, let’s say 2002 up to 2008, the activity was actually teaching the world, your environment here, the language and the techniques around strategic planning, and now that they’ve learned that, you say now we have this thing called data that we’re now going to use to support our strategic planning activities”. |
| P4DACB      | “One barrier that I don’t think is ever going to go away is that the culture of higher education is really a committee-driven – I mean, you used the word silo, but it’s sort of a unit-driven organization where people think of their work in kind of discrete units”.

“So that, I think, is a barrier, the fact that using data and particularly the quality stuff often seems very corporate or factory-like, and you have to make sure that academics understand that it’s not that”.

The colleges are experiencing challenges in creating integration between higher education traditions and business management cultures which forms a blended culture to seamlessly improve data management and analysis within the community college setting. To facilitate this culture blending, community college leadership teams need to make available professional development programs for all appropriate levels of employees to ensure that all have a uniform understanding of data management techniques to enhancing institutional effectiveness.

**Interview Question #7:** *How would you characterize the organizational culture before and after the adoption of data-driven decision making practices fostered by AQIP?*

Two cultural traits emerged as the supporting foundation for the integration of AQIP and the data-driven decision-making philosophy. The first cultural trait identified by participants described an environment where the employees were on one accord and were committed to using data to improve organizational effectiveness. The second cultural trait identified by the participants identify the practice of committee-driven decision making, as found in higher education settings, as a catalyst for establishing a data-driven decision-making environment.

Committee-driven decision making is a key building block for establishing a data-driven decision-making environment, because it conditions the organization to be accepting of the concept of “teaming” which leads to collaborative data analysis and planning. The collaboration fostered by “teaming” facilitates greater utilization of data throughout the institution in the
development of new policies, procedures and processes. Table 40 identifies the cultural traits that support the use of AQIP and DDDM.

Table 40.

Cultural traits that support the use of AQIP and the data-driven decision making philosophy

<table>
<thead>
<tr>
<th>Emergent Themes</th>
<th>Participant Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>College is on one accord and is committed to the mission to improve the college through evidence-based decision making</td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Committee-driven cultural legacy found in higher education environment has conditioned the institution to integrate DDDM</td>
<td>X</td>
</tr>
</tbody>
</table>

Participant, P6SACC, summarizes the comments made by most participants that identify an “accepting data” culture as a trait that has supported the use of the AQIP and DDDM.

P6SACC stated,

And I definitely think the idea of using data more has, as a culture, been more accepted. It’s still working in. I think the idea of data, it took a while for people to at least get the hunger for it, and now they have a hunger for more data,… I think it [organizational culture] supports the use of AQIP and data-driven decision-making philosophy within the college in that we are infusing data into all the difference processes…

Participant, P4DACB, was the only participant that offered an alternate cultural trait that has served as a foundation during the migration to a DDDM environment. They stated,

The culture of the institution has been very committee-driven, just like just about college, right? And since a lot of data-driven and quality work is done in teams, we know how to support teams. We know how to get them together, and schedule them, and feed them, and listen to their findings when they come out with recommendations.
It must also be noted that the same participant identified this trait as an inhibitor. This perspective brings to light the importance of understanding that the historical culture must be taken into consideration by academic leaders as they develop strategies for transitioning to DDDM, because it is an ever-present influencer in the behaviors of the organization’s employees.

The participants stated that there were three inhibitors that slowed the integration of AQIP and the data-driven decision making philosophy. The three cultural inhibitors explicitly stated by the participants were: a) employees not trusting or having confidence in the data gathered; b) employees lack requisite analytical skills to interpret the data and thus do not have the assurance the data results can be used to support decision-making; and c) the hierarchal environment can slow the pace of innovation and organizational change. Table 41 lists the cultural inhibitors to the use of AQIP and the data-driven decision making philosophy.

Table 41.
Cultural traits that inhibit the use of AQIP and the data-driven decision making philosophy

<table>
<thead>
<tr>
<th>Emergent Themes</th>
<th>Participant Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees not trusting or having confidence in the data gathered, and thus, not fully utilizing data for decisions or planning activities</td>
<td>X   X   X</td>
</tr>
<tr>
<td>Not having employees with the abilities or skills to interpret operational data and use data for day-to-day decisions and for strategic planning</td>
<td>X   X   X</td>
</tr>
<tr>
<td>Environment remains hierarchal and provincial and at times slows the pace of innovation and organizational change</td>
<td>X   X</td>
</tr>
</tbody>
</table>
The first two inhibitors raised concerns regarding the confidence in data used to support managerial decisions within the institutions. The participants approached the issue of confidence from two separate perspectives. The first raised the issue of whether the organizational employees as a group have a consistent commitment to support the organizational change through completion. The second perspective focused on the level of competence among employees raising the issue of whether each employee possesses the technical and interpersonal skills to conduct data analysis. The issues that were raised present the unique conundrums that exist when attempting to introduce and implement a program tied to comprehensive data analysis.

College A (small size) and College B (medium size) each identified maintaining group confidence in the data gathered and employee competence to support decisions and planning activities as a key inhibitors to organizational change. Participant, P1SACA, expressed that the college had experience,

…some trust issues between faculty and administrators over the years, …[due to] a lot of turnover. And so they [faculty] want to see that the new president…it’s got to come from leadership. If the president is walking the walk and not just talking the talk in terms of continuous improvement and actually showing examples of using data to make a decision, and not just saying, “Here’s the data, and here’s what we’re going to do,” making some connections, then I think people will follow that, because they trust that that’s how we’re going to go as a culture.

Thus, building a binding trust of the data analysis process among faculty is an ongoing effort in a data driven organization. Participant, P2FRCA, concurred with the senior administrator and commented on the degree of consensus they have achieved throughout the organization for data-driven decision making. When asked if able to achieve consensus within the organization regarding becoming a data-driven decision-making organization, they stated,
I would say at the high level yes. Not all the way through the organization. I think there’s an understanding by a strong core of individuals that we’ve got to become more data-driven. And we’re pushing that. We’ve got to start showing that it can affect us before...there’s so many people that will believe on faith and so many people that will believe based on what they see, and I think the people that are willing to believe on faith believe. Now we’re working on the next group, and they’re going to have to see some evidence.

The Dean at College B, also, described the inhibition as a group dynamic where members of organization experience some hesitancy because of they are comfortable with status quo and the application of new continuous quality improvement techniques challenges norms that they have become accustom to. Participant, P5DACB, expressed that,

…it is pretty universal, too. I think one of the things that people don’t like to…if people are resistant to change or don’t want to change what they’re doing, sometimes the last thing they want to do is look at a series of indicators or numbers about why they might need to change.

In addition to identifying group dynamics as an inhibitor, participants also identified other inhibitors that were linked to individual competence in the use of data analysis techniques and the hierarchal and provincial cultural climate typical found in higher education institutions. Universally, all the colleges stated that if the employees lacked the abilities or skills to perform the analysis required to interpret the results of the data, they may lack confidence in the results and not use them effectively to inform their decision making. Table 42 presents sample comments regarding individual competence.
Table 42.

Comments regarding individual competence with conducting data analysis

<table>
<thead>
<tr>
<th>Participant</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2FRCA</td>
<td>Being that we’ve been coming from this culture of I’ll just focus on what I need to work on, that means that I’m only looking at any particular set of data as it applies to me…Well, you know, we’ve got to be looking not only at ourselves, but our whole department and our whole institution and so forth. That cultural change needs to be happening so that we actually use that data and don’t just look at it as far as what’s in it for me.</td>
</tr>
<tr>
<td>P4SACB</td>
<td>I think faculty and staff, a lot of times, would prefer not to look at data and just talk in the, you know, we know there’s a pot of money there, find a way to do it kind of thing. So I think the quality process of working through those steps that are very data-driven was a good process to broadening [the individual capabilities of the team]</td>
</tr>
<tr>
<td>P8FRCC</td>
<td>…we’re not very good at interpreting data. I think that’s another thing, that we’re so new to really using data to make decisions that we’re not all that good at interpreting it yet. That’s a skill. And sometimes we even get the wrong data.</td>
</tr>
</tbody>
</table>

Lastly, participant, P5DACB pointed out that cultural climate also influenced the pace of acceptance of the Academic Quality Improvement Program and data-driven decision-making. They expressed that,

One barrier that I don’t think is ever going to go away is that the culture of higher education is really committee-driven – I mean, you used the word silo, but it’s sort of a unit-driven organization where people think of their work in kind of discrete units…we’re pretty traditional, committee-based, hierarchical, provincial. That’s not anything different from other schools. [However], that’s an inhibition,

Although the barrier existed, the P5DACB did not believe that the barrier was insurmountable and that the college has implemented new processes to bridge perceived boundaries between units to improve the management of the college.

Each of the participants have described the successes and challenges faced by their institutions as they transitioned from the traditional higher education committee-driven management approach to a new collaborative approach that relies on quantitative measures.. The
former committee-driven approach relied to a great extent on arbitrary practices tied to past experiences while the new management environment is linked to quantitative measures gathered in real-time. The participants have come to understand that the successful implementation of data-driven decision making within the community college will require re-norming; where institutional leaders need to effectively communicate new quantitative goals for institution and establish new work processes based on analytical results to challenge the embedded cultural legacies.

To successfully implement the concept of data-driven decision making throughout the organization, the academic leadership team must manage a dual strategy. This dual strategy builds the individual analytical skills of each employee and establishes trust of the data results among the employees of the institution so that the departments will use the data results to improve organizational effectiveness.

Given the diversity (expertise of personnel, variability in stakeholder requirements, and the broad breath of functional requirements fulfilled by departments), inherent in the community college environment, it is crucial the leadership team maintain an adaptive change strategy to ensure the integration of data-driven principles. An adaptive change strategy would include a flexible plan that includes continuous assessment of the environment to assure that the appropriate deployment of resources (physical, labor, capital, and informational) are maintain to ensure the college succeeds in establishing a lasting commitment among organization employees to the use of AQIP and creation of a permanent culture of evidence.

**Leadership**

Leadership is not static, but a dynamic activity that is responsive to the changing social, political, cultural and technological currents of the environment. Specifically, “leadership is a
relationship between the leader and their team….The leader has a point of view that allows him or her to: (1) see what needs to be done; (2) understand the underlying forces that are working in the organization; and (3) initiate action to propel the organization forward to accomplish its stated mission” (Thompson, 2008, p. 178). Thompson’s definition of leadership implies that leaders occupy a unique vantage point that gives them visibility not only of the external environment, but of the internal mechanisms to assist the organization with adapting to the influences of underlying trends or to changes in higher education policies. By changing or redefining some of the assumptions of the work groups and organizational design, the leader can stimulate incremental change throughout the organization.

However, for organizational change to remain permanent, the academic leadership team must communicate a consistent message that describes the motives for change and explains how proposed initiatives will address the organization’s needs. By identifying the motives for change from the perspectives of each of the participating colleges in this study, the research provided a context for similarities and differences in the course of action taken by the individual colleges to implement data-driven decision-making practices. These insights revealed why initiatives either excelled or slowed at each institution and discloses the role the academic leadership team has had in serving as change agents to guide their organizations through the development stages to implement processes that support data management and analysis to enhance organizational effectiveness.

The selection of AQIP by the study’s college presidents was a purposeful choice and afforded them a vehicle to address the new stakeholder requirements for greater financial accountability and improved program execution. Each college committed to AQIP as the pathway for achieving greater organizational effectiveness and efficiency through its emphasis
on systems analysis and continuous quality improvement. The management principles of the AQIP approach mapped perfectly to the professional backgrounds of the presidents and some of the senior leadership team.

All the presidents had professional work experiences within corporate settings that exposed them to management science principles. With this background, these presidents and their senior administrative teams may have found it easier to craft an organizational change message that leveraged the quality management elements that resonated within the AQIP design. They helped other organizational members envision the change to AQIP as an internally generated solution versus a solution imposed solely by factors emanating from beyond the college’s organizational boundary, thus easing the transition for organizational members. Survey results revealed the leadership style deployed by these presidents as they communicated the change to their organizations. Participates described the leadership styles present on the respective campuses as Mentor/Facilitator (Campus A) and Entrepreneurial/Innovator (College B and College C). Furthermore, they indicated that the atmosphere on the campuses was predominately loyal/traditional. These leadership styles are complementary to an environment where the workers show a tendency toward loyalty and help to support transformation change.

AQIP brought to the forefront a broad set of self-assessment and strategic planning tools (ie. Benchmarking, SWOT Analysis, & business process analysis) to assist the colleges in the development of customized tactics for: (1) improving overall college performance, (2) improving dissemination of key indicators of success to administrative leaders, and (3) to start the work at building collaboration across the institution. However, to fully implement the program within a community college environment, it has taken a strong commitment from the presidents along with their understanding of the continuous quality improvement management philosophy.
Further, it has taken presidents with an innovative and facilitating leadership style to guide the organization through the many transitional stages and to marshal support among organizational members to maintain loyalty to the execution of the new strategic initiative to establish an evidence-based decision-making culture.

**Knowledge Management**

The study identified the specific pathways taken by each college to inculcate a knowledge management structure and environment and to further assess their progress toward full implementation. Feedback from the participants and information from internal reports were evaluated to make sense of the organization’s degree of proficiency in the use of management decision tools (i.e., performance scorecards; benchmarking; performance ratios; and trend analysis) as well as assess the validity of their processes and management systems. Any competency gaps or evidence of successful implementations were documented and summarized in this analysis. The Ikemoto & March’s (2007) data management analysis framework was used as the analysis methodology to determine both the areas of success and challenge for the colleges.

The majority of the participants, five of eight participants, stated they were generally unaware of any specific data management processes or procedures that have been critical in facilitating the organization’s mitigation toward creating a data-driven management environment. This response was unexpected given the extent to which College B (medium sized) and College C (large sized) have formally compiled extensive performance data reports that are catalogued on websites managed by each institution. These reports are actively used by
senior administrators and the board of trustees to develop the annual strategic plan and to provide status updates on various departmental programs.

Each study participant commented they use various methods for communicating performance information to their stakeholders. The reporting formats used varied greatly between the colleges, either by taking the form of performance score-carding or benchmarking, general reports (such as factoids) or formal written reports to the Board of Trustees. Table 43 shows the comments on communications methods used to share organizational performance information.

Table 43.
Comments on Communications Methods used to Share Organizational Performance Information

<table>
<thead>
<tr>
<th>Participant</th>
<th>Theme</th>
<th>Supporting Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2FRCA</td>
<td>Local meetings, emails and web links</td>
<td>“We’ll get an email that has a link to where it’s posted out on our intranet. It’s always available out there, you could go find it, but the email is just the notification that it’s out there, and a link to it”.</td>
</tr>
<tr>
<td>P3SACB</td>
<td>Local meetings, emails and web links</td>
<td>“…we share it through our Institutional Research area, we share it through our academic areas, our administrative areas, student services. But as far as communication, I think we use face-to-face meetings and then we use our email and our web quite a bit”.</td>
</tr>
<tr>
<td>P7DACC</td>
<td>Local meetings, emails and web links</td>
<td>“The president sends out a daily email…. It goes to the community, faculty – it might even go to students as well. Every couple of days the president make mention of different measures – enrollment went up, this went down”.</td>
</tr>
</tbody>
</table>

College C (large sized) utilized the balance scorecard format supported by a robust enterprise data management system giving them the capability to archive volumes of data, perform intricate queries and generate reports with little interruption to daily management
operations. College B (medium sized) is building their data storage and query capabilities to begin using the score-carding performance method. Lastly, College A (small sized) is collecting and storing limited performance data and has not developed reporting methodology at this time.

Notably, a common challenge cited by each college was the absence of a portfolio or “short-list” of institution-specific key performance indicators. Scholars suggest that organizations implementing a data-driven approach to general management should develop a specific set of performance measures totaling no more than twenty that organizational leaders can reference to evaluate organizational effectiveness (Niven, 2008). These measures would represent a sub-set of a larger pool of data measurements the institution may generate for assessing operational and financial performance. Currently, the quantity of measurement indicators retained by colleges in this study varied significantly. In some cases, data is summarized in scorecard displays with less than a ten items or in databases containing several hundred performance indicators as in the cases of College A (small sized) and College C (large sized), respectively.

The absence of a portfolio of core performance indicators to assess institutional effectiveness and the recognition by participants that they lack a formal data management process to direct data collection, analysis and reporting raised the following questions: (1) To what extent has the linkage between quality management and data management been communicated to all levels of the organization? And, (2) Is the data currently being collected mapped to specific institutional strategic plan objectives to benchmark actual results to planned outcomes or is data solely reporting solely unit level performance?

It was found that access to and the timeliness of receiving data varied greatly between colleges and influenced individual use. College A (small sized) currently does not have the data
processing systems in place to generate real-time data to assess operational performance and instead relies on comparative data from outside surveys and reports to gauge the performance of their organization. College B (medium sized) and College C (large sized) have established data management systems to gather and report data to senior administrators, faculty and board of trustees. Table 44 shows supportive comments regarding the institutions’ perception of accessibility and timeliness of data. These comments were obtained from the AQIP Systems Portfolio accessible from the websites managed by each participating college.

Table 44.

Institutions’ Perception of the Accessibility and Timeliness of Data as Reported in Each College’s AQIP Systems Portfolios

<table>
<thead>
<tr>
<th>AQIP System Portfolio, 2008</th>
<th>“College A is not using real-time data and instead is relying survey data gather through third party service providers (AQIP Examiner, CCSSEE and NCCBP) to measure institutional effectiveness.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQIP System Portfolio, 2009</td>
<td>“Distribution of [performance] data at College B is accomplished via Employee Forums, Web pages, memos, emails and submission/participation in external reporting sites. The Director of Institutional Research maintains a taxonomy of all reports.”</td>
</tr>
<tr>
<td>AQIP System Portfolio, 2009</td>
<td>“College C’s key institutional measures for tracking long-term effectiveness are identified in the College’s Balanced Scorecard”</td>
</tr>
</tbody>
</table>

When asked to consider the perceived influence of the data, findings were similar across the colleges. They all indicated the shared the common perspective that organizational members were challenged by the volume of data and were seeking new methods for managing and reporting data better. The study participants clearly indicated the data management infrastructure needed improvement and the employees needed additional training on how to
query the data and interpret results. Table 45 summarizes the perceptions participants have regarding data validity.

Table 45.

Study Participant’s Perception of Data Validity

<table>
<thead>
<tr>
<th>Study Participant</th>
<th>Perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1SACA</td>
<td>“…you almost have to get to that plateau of going from no data or little data to lots of data before you can then say, okay, it’s great that we have a lots of data, but we’re really not using it. I mean, we have to make a decision, are we going to continue collecting this? Because just collecting it to collect it isn’t helping us”</td>
</tr>
<tr>
<td>P4DACB</td>
<td>“…we don’t maybe do as much targeting and benchmarking as we would like.”</td>
</tr>
<tr>
<td>P7DACC</td>
<td>“But I think that’s the biggest barrier that the college has faced, the whole infrastructure, collecting the data, and then how do we start reporting that out and getting people trained so they can query their own data”</td>
</tr>
</tbody>
</table>

Looking closer at the capabilities of the employees to interpret operating data, it was found the personnel often lacked adequate ability and knowledge to formulate questions, select indicators, analyze the data, interpret results and develop solutions. A chief reason cited for the lack of continuity in capabilities was the failure by senior leadership (trustees, administrators, faculty, and staff) to reach consensus on the institutional measures that will be used. The colleges must continue to overcome the traditional decision-by-committee approach that is found in higher education if they are to be successful in shortening the development time for creating institutional measures. Table 46 highlights comments made by participants regarding the staff capacity and support issues.
Consistent across all levels (senior-administrative, mid-administrative and faculty), the participants cited the existence of several barriers to effective utilization of data within their institutions. One barrier is linked to the rapid growth in data which is beginning to burden existing management systems. It was noted the existing data infrastructure is not at the required capacity to accommodate the increase in data inquiries from departments; consequently, participants foresee the need for the colleges to make additional capital investments in hardware and software solutions. Second, participants commented that many employees do not have the abilities to determine essential relationships from the data that will assist internal decision makers and thus need additional training to develop the appropriate analytical skills.
Collectively the participants believed their organizational cultures needed to evolve further in the direction of instilling a greater level of commitment toward actively incorporating data results into their decision process and continue to shift emphasis away from focusing solely on data gathering. Table 47 highlights the data analysis and management challenges faced by the participating colleges as they integrate DDDM into their management systems.

Table 47.

Data Analysis and Data Management Challenges Cited by Participants

<p>| | |</p>
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>P1SACA</td>
<td>“…you almost have to get to that plateau of going from no data or little data to lots of data before you can then say, okay, it’s great that we have lots of data, but we’re really not using it. I mean, we have to make a decision, are we going to continue collecting this? Because just collecting it collecting it to collect it isn’t helping us.”</td>
</tr>
<tr>
<td>P5FRCB</td>
<td>“I think that’s a big issue, is how to get data here. And the other thing is that we’re not very good at interpreting data. I think that’s another thing, that we’re so new to really using data to make decisions that we’re not all that good at interpreting it yet. That’s a skill. And sometimes we even get the wrong data.”</td>
</tr>
<tr>
<td>P7DACC</td>
<td>“But it’s a culture change, a paradigm shift, trying to get people to start looking for those reports as opposed to, oh, here’s another report; I’ll look at it later.”</td>
</tr>
</tbody>
</table>

To ease the transition to a new culture of evidence, the colleges have formed partnerships with outside organizations to identify preliminary measures to assess programmatic and overall organizational performance, determine data collection protocols and conduct benchmarking. In particular, the colleges have worked with data from external organizations, such as other community colleges, consultants, and government agencies to obtain needed technical support. All the colleges have reference data from CCSSE or the National Community College
Benchmark Project to supplement their performance data requirements. Table 48 captures comments from institution leaders regarding the external data sources used by the participating colleges to assess performance of their academic services and programs. These comments were obtained from the AQIP Systems Portfolio accessible from the websites managed by each participating college.

Table 48.

Examples of External Data Sources Used by Participating Colleges

| AQIP System Portfolio, 2008 | “Over the past five years at College A, CCSSE survey results have become an integral part of the continuous quality improvement process to help faculty focus on good educational practices that promote high levels of student learning and retention and to identify areas in which we can improve programs and services for students.” |
| AQIP System Portfolio, 2009 | “College B is considering joining the National Community College Benchmarking Project (NCCBP).” |
| AQIP System Portfolio, 2009 | “College C administers the Personal Assessment of College Environment (PACE) survey to all employees every three years and the CCSSEE survey.” |

Implementing a data-driven approach to management requires a systematic data analysis and reporting approach. This course of action incorporates the use of specific data management tools capture, catalogue and display the data results in a format organizational leaders and trustees can review. Data management tools are the instruments used to consolidate information or data into a consistent format that supports concurrent and recurrent data analysis and presentation.

Commonly used tools included score carding, benchmarking and ratio analysis. Score carding is a convenient method displaying key performance indicators in summary form to aide
assist decision makers. Benchmarking and ratio analysis is used to perform comparative analysis of the host organization against competing organizations and convert disparate bundles of information into form that can be easily studied. The approaches taken by each college to organize, review, as well as communicate findings to academic leaders and external stakeholders were not uniform.

For example, College A (small sized) is still in the early stages of developing procedures for gathering real-time data and inputting the information into data schedules or frames that support analysis by department or senior academic leaders. It relied on paper reports to communicate data results and had not developed data standards to use benchmarking nor produced a scorecard to report results. College B (medium sized) is further along the continuum toward having a formal data collection and reporting methodology. It generates paper reports and posted information on the web. However, the college is still developing the mechanisms that will be required to provide performance reports of specific programs to stakeholders and consolidate the results of comparative analysis between the college and other best-in-class higher education institutions.

Lastly, College C (large sized) is an exemplary college in this regards among the participating colleges. The college collects a large amount of programmatic and operational and financial data. College C has developed the data architecture needed to display the data into multiple visual formats (i.e. print, internal desktop and external Web) and has provided college-wide access to the data using score carding and benchmarking extensively to report results to their employees and stakeholders using the web. For College C, the final area of focus is narrowing down the available data to portfolio of key performance indicators of no more than twenty. These key performance indicators would represent the summary measures for the entire
institution and would be used by institutional leaders to create strategies for enhancing organizational effectiveness. Table 49 reports on the data management techniques utilized by the colleges to store, retrieve and communicate their data results. These comments were obtained from the AQIP Systems Portfolio accessible from the websites managed by each participating college.

Table 49.

Data Management Techniques Utilized by Participating Colleges to Store, Retrieve and Communicate their Data Results

| AQIP System Portfolio, 2008 | “College A relies on ad hoc reporting and does not have a formal reporting process for collecting, reviewing and communicating data by reviewing results, and (2) to provide recommendations on how to best disseminate and utilize those results.” |
| AQIP Systems Portfolio, 2009 | “College B has not yet developed dashboards or balanced scorecards to support reporting, but the capacity to do so now exists and discussions are planned to proceed in this direction.” |
| AQIP Systems Portfolio, 2009 | “College C’s key institutional measures for tracking long-term effectiveness are identified in the College’s Balanced Scorecard. These measures provide a balanced approach for assessing the organization by tracking results related to teaching and learning, overall organizational quality and effectiveness, internal processes (People) and financial measures...” |

Ikemoto & March’s (2007) framework concludes with a review of organizational culture and leadership. The connection between leadership direction and its influence on the evolution of organizational culture and leadership has been affirmed throughout knowledge management, organizational change and organizational development literature. According to Edgar Schein, “leaders have available to them embedding mechanisms to teach their organizations how to perceive, think, feel, and behave…” (2010, p. 236). These mechanisms take shape in reality as individual directives set forth by the leader or specific actions that model the desired behaviors
the leader seeks to be performed by organizational employees. Three of the embedded mechanisms proposed by Schein were:

- What leaders pay attention to, measure, and control on a regular basis
- How leaders allocate resources
- Organizational design and structure considerations

Without question each college was affected by the application of all three of these mechanisms. All of the college presidents leveraged previously obtained corporate training in the discipline of continuous quality improvement to promote the principles of total quality management and communicated how this business practice could be integrated into their institutional cultures. Further, they selected the Academic Quality Improvement Program to provide the formal conceptual grounding needed to initiate the migration to a quality-centric and data-driven culture.

As a consequence of adopting the AQIP, they redesigned the organizational structure to establish new management roles that focused specifically on building the data management infrastructure and needed capabilities among organizational members. One example of organizational restructuring that occurred at each one of the colleges was the consolidation of data collection, archiving and analysis support within the office of Institutional Research. Centralizing data management within the department of Institutional Research is prudent because traditionally this department has been responsible for archiving data for the college and performing data queries.

With strategic organizational change, come changes to the organizational culture. In this study, participants were asked to share their insights regarding how organizational culture has either supported or hindered the integration of data-driven management practices to enhance
institutional effectiveness. To characterize the existing cultures, as defined by the study’s participants, the Competing Values Framework was utilized. The results have been incorporated into the following section discussing organizational climate.

**Organizational Culture**

Organizational culture represents a core driver of organizational behavior, but it does not act alone in influencing an organization’s readiness to accept the integration of new initiatives such as data-driven decision-making. Schein (2010) suggest that “specific evolution toward the next stage of organizational development involves the adaption of specific parts of the organization to their particular environments and the impact of the subsequent cultural diversity on the core culture” (p. 276). Knowing the cultural traits found in the participating colleges offered a more complete picture of the organizational climate present in each. It is the organizational climate that supports or inhibits organizational development and strategic change.

Integrating data-driven decision-making (DDDM) principles into the management philosophy of the community college, requires academic leaders to stimulate the expansion of the core culture to be inclusive of new behaviors. One such behavior DDDM stresses is for the institution to reach a higher level of autonomy among department leaders, greater collaboration across organizational levels (administrative, faculty and staff) and greater analytical skills. Organizational leaders guide their institution through the transformation into a new and more complex form utilizing the following organizational influencers: commitment, recognition, responsibility, structure, support, and standards to stimulate organizational behaviors that establish the appropriate organizational climate for change.

The analysis of the organizational climate found within the institutions participating in this study uses Stringer’s (2002) Organization Climate framework. Organizational climate can
either arouse motives that appeal to behaviors supportive of organizational change or inhibit the successful introduction and acceptance of change initiatives by employees. Research has shown that organizational climate is not a random occurrence, but is caused in response to outside stimulus including, external environmental forces (e.g., political, social, technological), internal strategic plans, leadership practices, organizational structure and historical events (Stringer, 2002). Cultivating the best organizational climate for achieving an atmosphere that motivates employees to seek opportunities for enhancing institutional effectiveness and strengthen collaboration among organizational members requires intelligence and knowledge (information) that clearly defines the characteristics of the organizational climate that exist.

With this knowledge, community college leaders can adeptly develop strategies and organizational design alternatives (i.e., new organizational structures or new roles and responsibilities) to maximize the utilization of available resources as well as establish a favorable organizational climate. Table 50 describes the characteristics of the organizational cultures found at the three participating colleges and defines them by college and by the individual climate designators of culture, structure, commitment, recognition, responsibilities and support.
Defining Organizational Climate.

Table 50.

Summarizes the descriptive commentary describing the organizational climate at each of the participating community colleges.

<table>
<thead>
<tr>
<th>CLIMATE DESIGNATORS</th>
<th>COLLEGE A</th>
<th>COLLEGE B</th>
<th>COLLEGE C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Culture</td>
<td>Hierarchy</td>
<td>Clan, Adhocracy</td>
<td>Clan, Adhocracy</td>
</tr>
<tr>
<td>Commitment</td>
<td>High Senior Management Support for DDDM</td>
<td>High Senior, Middle &amp; Line Management Support for DDDM</td>
<td>High Senior, Middle &amp; Line Management Support for DDDM</td>
</tr>
<tr>
<td>Recognition</td>
<td>No Responses Gathered</td>
<td>No Responses Gathered</td>
<td>No Responses Gathered</td>
</tr>
<tr>
<td>Responsibility</td>
<td>Top-down approach; senior-level approval needed for decisions</td>
<td>Participatory decision-making/some senior-level approvals needed for decisions</td>
<td>Employees encouraged to problem-solve independently</td>
</tr>
<tr>
<td>Structure</td>
<td>Responsibilities not well defined</td>
<td>Participatory, responsibilities evolving</td>
<td>Participatory, responsibilities evolving</td>
</tr>
<tr>
<td>Support</td>
<td>Limited Organizational Readiness, Teams not clearly defined</td>
<td>Senior Management Support/Team work evident</td>
<td>Formal Support Infrastructure (On-line) &amp; Senior Management Support/Team work evident</td>
</tr>
<tr>
<td>Standards</td>
<td>Initiating the creating of performance measures</td>
<td>Actively looking for ways to improve performance</td>
<td>Actively looking for ways to improve performance</td>
</tr>
</tbody>
</table>

The table shows that the organizational climates were distinctive between the colleges. These differences can be attributed to leadership styles of the academic leaders, skill levels of organizational members (administrators, faculty and staff), and data management capabilities. Thus, each college has developed at their own pace as they implement the Academic Quality Improvement Program.
Organizational Development and Outcomes.

The participant colleges have the common goal to enhance organizational effectiveness. Each can plot their goal at different stages along the continuum toward establishing the desired data-driven decision-making environment. Their leaders have guided each independently toward this goal and each has accomplished a specific level of development toward this aim. All organizations undergo organizational changes as part of their life-cycle and the literature describes these events as sequential transitional phases (Kotter, 1995; Greiner, 1998). In each phase, the organization adapts to a new configuration in order to address internal and external environmental forces influencing the strategic direction or path the leadership team has chosen to achieve the stated mission. Overall, these changes can be either localized at the departmental level or seen across the institution involving the complete reconfiguration of systems, structures and processes.

The literature advises that the time spent by organizations within each developmental phase or stage can last an indeterminate amount of time because of the: (1) complexity of the systems; (2) organizational culture; (3) the political environment that exist within the organizations; and (4) the leadership commitment to see the organizational change through to the end (Tichy, 1983, Greiner, 1998). Greiner (1998) offered as an estimate of the duration (the time) an organization can spend within a development life-cycle from phase one to phase five as three to fifteen years. Applying this estimate to the study’s participants, it was found that the estimate was reasonable in light of the number of years that have elapsed since each college embarked on their organizational change. In response to the demographic survey given to all study participants, the group reported the time expired since their transition from PEAQ to AQIP
has ranged between five to eight years and is well within the parameter established by Greiner’s research.

**Applying Greiner’s Model**

Greiner (1998)’s organizational development model provides a visual framework for assessing an organization’s progress following a transformative organizational change from its current-state to a future-state in order to reach an ideal state of greater collaboration in the workplace. Greiner argued that the organization obtains its ideal future-state when there is uniform collaboration among organization members indicating that the norms, values and behaviors have aligned with the purpose for the organizational change. Greiner’s argument has been support by numerous organizational change scholars who believed that organizations that reach a state of collaboration have been found to achieve the highest level of organizational effectiveness and performance (Gersick, 1991; Roueche, Johnson, & Roueche, 1997; Schein, 2010). The data gathered from the transcripts and surveys was transposed onto Greiner’s (1998) model to show the relative progression of each college toward institutionalizing the concepts of institutional effectiveness and data-driven decision-making. Figure 19 compares and contrasts each college across Greiner’s five dimensions (management focus, structure, top management style, control systems and rewards) of organizational development.
College A

College A (small sized) is operating within Stage 2, the directive stage. In this stage, the management focus of the college is centered on identifying the resources, work processes and procedures to achieve the stated outcomes of the change initiative. This is also the stage to identify the appropriate organizational structures needed to sustain an environment supportive of quality improvement and institutional effectiveness. The college utilizes divisional leaders, assigned by central office administrators, for maintaining functional continuity and to supervise
the general reporting of departmental results. Currently, to measure organizational performance the college relies primarily on standardized industry surveys developed by the National Community College Benchmarking Project and Community College Survey of Student Engagement and a limited number of internally developed key indicators. The key areas of interests for control are student records, financial accounting and compliance with required state and federal reports involving funding and accreditation. To that end, the focal point of the college’s leadership council is to “create a baseline of what it is that we do, what processes we have in place, what results we have achieved, and what improvements we need to implement rather than to develop new processes to fill gaps in our portfolio that do not represent areas we have fully explored or examined” (P1SACA).

College B

Collage B (medium sized) is transitioning from the direction stage (Stage 2) to the delegation stage (Stage 3). The college reported in their AQIP Strategic Portfolio that the organization is “at the beginning stages of conducting its operations by repeatable, consistent processes that it can evaluate and improve. Further, the college is focused on designing proactive processes that prevent; rather than, discover problems” For example, a process identified during the interview included the utilization of cross-functional teams to encourage peer-to-peer and vertical collaboration to ensure improvement processes are being implemented and communications are occurring between all sectors of the college. “The value the college sees in relying on cross-functional teams is that these teams are now beginning to look at the data, think about it and most importantly what AQIP did was it brought data-driven decision making to a broader audience that you have to look at data to improve performance” (P3SACB). However, the college is still facing a challenge in implementing a comprehensive data-driven
decision-making approach that will be supported by all administrative and departmental leadership teams. The cross-functional teams have not as of yet achieve the status of a fully collaborative and participatory management style among team members. According to P4DACB, “a growing number of departments and areas routinely develop goals and priorities in effort to improve systems, infrastructure, and activities leading to improved student success and service to the community”. However, P4DACB continued that “College B needs to move beyond the AQIP Action Project process to identify opportunities to utilize CQI principles for processes improvement. There is a great deal of growth in the area of Measuring Effectiveness in College B’s processes”. The challenges facing College B is that the administrative team is setting goals for a greater number of campus projects, but “many of these goals are implicit or poorly defined; means of measuring progress toward targets is often done after the fact as opposed to being part of a clearly-defined improvement process” (P4DACB).

College C

College C’s (large sized) management focus is now moving from delegation (stage 3) to the broader coordination phase (stage 4) where the college is now assigning ownership of performance measurement and performance results to specific department owners. These data owners are tracking results related to teaching and learning, overall organizational quality and effectiveness, internal processes and financial measures. All measures are consolidated in a formal report format or college-wide score card for distribution to the Board of Trustees, as well as supplied in an electronic format for viewing by all organizational members. It is important to note that the reports are compiled using internal trend and student and employer satisfaction data and external data captured from environmental scanning. Further, “most of the measures have a target goal, with some using upper and lower limits or equity in performance, while some
measures have targets provided by state or federal agencies” (AQIP Systems Portfolio, 2009).

To develop analytical competencies among senior administrators and employees, the use of advanced quality-centric decision making protocols based on Six Sigma has been adopted and a mentor program has been established to further develop team learning to provide CQI training to team leaders responsible for disseminating quality standards throughout the organization. In addition to educating the organizational members on the quality standards, the mentors also are responsible for helping to move the college towards a “learning organization”. Mentors facilitate this by promoting the shared vision outlined in the college’s strategic plan and assisting faculty, administrators and staff throughout the college achieve personal mastery of the techniques used for data analysis and reporting. For this college, the use of mentors was as necessity as the data base of key performance indicators has grown significantly over time. To gain benefit from the data collected, the leaders recognized the continuous need for both training and mentorship to build the confidence of the employees as they use key performance indicators to guide their decisions.

The colleges are situated at different positions along Greiner’s organizational development continuum. While they differ in achievements, each college has made some similar structural shifts. In addition to the steps taken by all colleges to instill a professional development component to support the movement of their institutions along the change continuum, each college has made specific changes to roles and responsibilities of key personnel. Organizational structural shifts are expected to occur as rationalized by Levine (1980), in describing organizational change in higher education, “the innovation and the host organization have at least a somewhat different set of goals, norms and values, and as a result, a differing set of boundaries”(p.13). These differences in boundaries, which often times result in changes in the
organizational structure, typically adjust roles and responsibilities to accommodate the innovation. Several organizational changes were reported by the study’s participants. All the changes occurred at the administrative level and in particular most occurred within the Institutional Research area. Table 51 contains comments by participants identifying the new positions created at each college and the rationale behind the selection.

Table 51.
New Positions Created to Support Data-Driven Decision Making as Cited by the Participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Theme</th>
<th>Supporting Quotation</th>
</tr>
</thead>
</table>
| P1SACA      | Added Institutional Effectiveness Committee | “[had to determine] how do we need to pull our data together, and the result was we needed an institutional researcher”.
| P3SACB      | Added Executive Dean of Research & Planning and Quality | “…there needed to be somebody to lead professional development at the college”.
| P7SACC      | Director of Operations                     | “position, in part, is charged with trying to create a center of best practices and standardization of how the different centers in the college work together”.

**Conclusion**

This chapter summarizes the findings of the study into three broad a priori themes: leadership, knowledge management, and organizational climate. The findings from the study revealed that the presidents and their senior leadership teams were pivotal in sustaining change and remained at the front of the movement providing guidance and feedback. The academic leader at each of the colleges conducted themselves in the manner described in organizational development and change literature (Kotter, 1988; Davila, Epstein and Sheldon, 2006)) when executing change within a complex organization. According to the literature, any management
system embodying strategic planning and data-driven decision-making principles, invokes three key information flows (communication, monitoring and learning).

Within the management system at each institution, the findings show that the senior administrative team: (1) communicated the vision to the organization providing the foundation and pathway for change; (2) used the measurement system to monitor organization performance toward the long-term goals (action Projects and Systems Portfolio); and (3) received feedback (System Survey) from the organization as it learn which levers were important for furthering organizational development. Clearly, the findings from the three colleges show evidence that the presidents provided an explicit vision for the colleges to pursue and set them on a path to initiate implementation plans for enhancing institutional effectiveness.

Two hurdles remain to be cross is the creation of a data management system that can be used by organizational members to control work processes more efficiently. Given the variety of departments that exist within a community college, the data-driven management environment requires reliable data infrastructure that supports data archiving and retrieval. Staffs with database management and networking experience need to be added to the team to fill identified skill gaps to maintain data systems and provide professional development programs to train college employees how to retrieve the required data in order to address their inquiries. However, to effectively utilize the retrieved data, faculty, administrators and staff must have the requisite analytical skills.

Lastly, the findings show that participant colleges are at different stages along the continuum the participating colleges are in establishing data-driven decision making climates. Pointedly, the findings show that the time community college administrators have to focus on strategic organizational change have had a direct effect on the depth of integration that has
occurred. A clear example took place at College A (small size) where the institution completed a merger that redirected management resources temporarily and as a consequence slowed the transition to the data-driven environment. In contrast, College B and College C have moved steadily along the organizational development continuum and have established data management protocols and formal reporting mechanisms for their stakeholders.
Chapter 6 - Conclusions and Implications

Introduction

This study was a qualitative inquiry of three independent Midwestern community colleges and was undertaken to assess the depth and breadth of integration that has taken place within these institutions as they advance the use of organizational data to measure and evaluate organizational effectiveness. The participating colleges were randomly selected from a pool of member colleges participating in the Higher Learning Commission’s Academic Quality Improvement Program (AQIP). Interviews were convened with representatives from specific organizational ranks to understand how each college integrated data-driven decision-making practices into the decision protocols occurring at each level of the college. The participants selected held the positions of Academic Vice President, Academic Dean and Faculty. By choosing individuals from across the organizational hierarchy, the study produced evidence that described how the pace of integration had been delayed or supported by existing work processes, procedures and the culture of the organization. This final chapter of the study answers the research questions, presents the implications for community college practice, proposes recommendations for future research, and sets forth the Callery Knowledge Management and Effectiveness Integration Model (KEIM) as a viable framework to guide community college administrators in their efforts to integrate data-driven decision making practices throughout their institutions to enhance organizational effectiveness.

Review of The Chapters

Chapter one provided an overview of the sweeping social, political, technological and cultural changes that have occurred over the past three decades within the general environment
and the influence of these forces on management practices and operating strategies for community colleges. These social-economic changes have created a general condition where key stakeholders (e.g., trustees, legislative agencies, accrediting agencies, community organizations and students) are now called upon all community colleges to immediately marshal intellectual, financial and physical resources to implement transformative strategic initiatives. These quality improvement initiatives include such items as data-driven decision-making, performance scorecarding and benchmarking to assure accountability and to enhance institutional effectiveness.

Following the brief examination of the environmental factors influencing operational decision-making in community colleges, the discussion continues with the introduction of the purpose of the study and the driving questions that arose from the purpose. A brief review of the study’s conceptual framework, the methodology employed, a glossary of key terms, and an overview of the dissertation is included.

In Chapter two, the literature review presented theoretical concepts that situated the study. The concepts provided the conceptual grounding that informed data collection and analysis. The concepts selected for this study were taken from several areas of scholarship; principally, management science, organizational change and development, systems theory and knowledge management. In general, the theories and concepts of organizational development, knowledge management and organizational climate emerged from the scholarly examination of the literature to serve as the conceptual framework for the study. These theories and concepts are Ikemoto & Marsh (2007) Data-Driven Decision Making Process Model for Higher Education, Levin (2001)’s Four Domains of Globalization, L.E. Greiner (1999)’s Five Phases of Organizational Development and Robert Stringer (2002) Organizational Climate Model.
Chapter three provides an overview of the qualitative paradigm and a justification for its application as the preferred research approach. In addition, the chapter offers a narrative that details the: (a) the case study methodology; (b) site and participant selection criteria and protocol; (c) data collection and management; (d) data coding and analysis; (e) trustworthiness, validity, and rigor of the research; (g) limitations of the study; and (h) the researcher as the tool. The case study methodology was selected for this study, because case studies follow a defined structure of investigation that was ideal for this inquiry. This type of study uses a bounded system approach where the colleges were identified as the unit of analysis. Application of the case study approach generated an end-product that was a thick and contextual narrative of the processes, successes and challenges experienced by the colleges as they integrate the data-driven decision-making approach. To ensure trustworthiness, credibility, dependability, and transferability, numerous measures were employed including: (1) researcher reflectivity; (2) rigorous research protocol; (3) purposeful sampling; (4) sourcing of data and information from multiple points of interest; (5) triangulation of data; and (6) the production of rich descriptions of the data and information gathered.

Chapter 4 is the data presentation chapter. In this chapter, the data collection process is reviewed. In addition, a narrative summarizing the characteristics of each of colleges and participants is presented enhancing the contextual relevance of the findings. Multiple tables tabulating responses to a questionnaire administered to all participants and from the interview transcripts summarized participant perceptions of the organizational culture, organizational climate, and knowledge management capabilities of each participating community college.

With regards to organizational culture, the participants assessed team orientation, coordination and integration abilities of organizational members, customer focus and agreement
between organization members of the common goals and objectives of the institution. Questions regarding organizational climate centered on perceptions regarding the degree of structure, performance standards, responsibility, recognition, support and commitment. Lastly, the inquiry focusing on knowledge management aptitude centered on the following seven dimensions: (a) accessibility and timeliness of data; (b) perceived validity of influenced data; (c) staff capacity and support; (d) time; (e) partnerships with external organizations; (f) tools; and (g) organizational culture and leadership.

Chapter 5 described the data analysis process. Case studies “require rich descriptions in order to gain sufficient information to check for trends, to rule out competing explanations and to corroborate findings” (Merriam, 1998, p. 29). The researcher used data source triangulation to uncover themes that arose from the collected data. Data files were examined multiple times and stored in an electronic database. The a priori themes of leadership, organizational climate and knowledge management served as the lens for data analysis. All emergent themes, including a priori themes, arising from the findings were thoroughly evaluated, described and discussed. This was accomplished through purposeful coding to identify prevailing themes. Findings were condensed into text, tabular, or visual images to summarize the findings. To ensure the anonymity of both the participants and their institutions, all participants and college locations were assigned unique identifiers and the full transcripts were excluded from the study.

Conclusions

**Research Guiding Question 1.**

*What issues identified by community college administrators motivated them to enhance institutional effectiveness?*
There were two determinates that motivated community college administrators to enhance institutional effectiveness. The first reason participants shared was need to adopt a system that supported continuous organizational improvement. The establishment of a support system enabled an avenue for recommendations that arose from the accreditation visits to be implemented and not abandon during the long cycle between traditional PEAQ visits. Secondly, the participants expressed that the college presidents saw AQIP as a viable program for instilling the concept of institutional effectiveness into the community college culture. Benefits from the methodical and systematic approach of AQIP encouraged engagement at all levels of the college and an embedding of the quality improvement principals needed to critically assess college operations. The Academic Quality Improvement Program, through action projects gave the senior leadership team specific activities to heighten engagement among organizational members to ensure the commitment to organizational improvement endured beyond the completion of the accreditation audits.

Further, at the start of the transition from PEAQ to the AQIP it was reported by the study’s participants that all of the presidents were experienced in working with the AQIP’s anchor concepts (total quality management and continuous quality improvement). Each had worked for several years in the private sector where they were formally introduced to the quality concepts and used this advance knowledge to streamline the introduction and implementation of the program within their colleges. For them, the AQIP became the primary tool for establishing the needed management discipline to institutional effectiveness.

Given their familiarity and comfort level with applying quality management, the presidents of the colleges in this study assumed the lead as key spokespersons and orchestrators of the transition to AQIP. They oversaw the design of new organizational structures and the
selection of members to work on transition projects. Further they assumed the responsibility of communicating the progress made in developing initial key performance indicators, the appointment of new managers responsible for data administration and development of reports to announce period results. The presidents by far exerted the greatest influence over the transition teams and the work they performed as part of the organizational change initiative.

**Implications of Findings for Community Colleges.**

For most community colleges, senior administrators seeking to instill the concept of institutional effectiveness must proceed from a new frame of reference. A context characterized by the need to define the performance of the organization using discrete measures to compare the institution to establish standards in higher education, other community colleges, as well as monitor its performance annually. The objective is to gather organizational information and perform data analysis that evolves from one’s on insights into general knowledge that can be used by organizational employees to improve efficiencies in the delivery of academic services, programs, and student support services. The responsibility of academic leaders within a data-driven decision-making environment is to ensure that the investment made in this effort results in data representative of the work processes under review. Further, gather organizational resources to make certain that the data analyses are performed with a high degree of accuracy and the results are used to inform decisions which produce outcomes that can be replicated over time. The literature is clear that this level of proficiency in the use of organizational performance data is best achieved when an organization fully adopts a knowledge management posture (Leveille, 2006; Mills, 2006; Swan, 2009).

Community colleges are faced with unprecedented challenges from external forces (social, economic, technological, and cultural) impinging on the organizational boundary and
from internal stakeholders (students and employees) desiring higher quality services. These forces compel academic leaders to seek and incorporate innovative management solutions from outside the higher education community to strengthen the organization’s functions and capabilities. However, adopting tools conceived in a corporate environment has resulted in significant integration challenges; such as, identifying or developing appropriate key performance indicators, training employees to perform data analysis and communicating the results of the analysis to organizational decision makers. In effect, community college leaders must assume the role of change agents to manage the transformation of their organizations to fully integrate strategic planning initiatives, such as data-driven decision-making to enhance institutional effectiveness. These organizational change activities must include changes in organizational hierarchy, personnel development and investment in information technology infrastructure.

To instill these new management capabilities, the president and their senior academic team must develop a formal control function. The intent of the control function is to provide feedback to organizational leaders regarding the institution’s performance. This feedback should be used to enrich the strategic planning process by providing vital information that reports on the achievement of mission outcomes and areas for improvement. The information emerging from this process becomes the data source used to revise the strategic plan.

**Research Guiding Question 2.**

*How and in what ways was data-driven quality initiative implemented?*

Participant colleges have committed to the data-driven quality initiative, but the degree of integration varied significantly. There were clear differences among the colleges regarding:

(a) the number of key performance indicators selected for monitoring performance; (b) the
number of positions created to supervise the dissemination of data-driven decision practices throughout the organization, as well as the depth of expertise in conducting data analysis and interpretation; and (c) the sophistication of the reports used to present detailed information and data pertinent to the primary performance measures. The differences in application of data driven decision-making (DDDM) practices was largely due to each college’s ability to deploy appropriate resources (i.e. capital, labor and physical resources). All participants believed that the best way to integrate data-driven decision-making practices into the institution was by managing the initiative through the Institutional Research department where this department could provide critical research and data management support.

Evolving into an organization where data is used across the entire institution to inform decision making has placed substantial demands on the existing data management architecture at each of the colleges. It was apparent all study sites experienced expanding data demands resulting from a greater number of inquiries from administrators, faculty and staff managers that have taxed either existing data systems or labor capacity. However, the reported differences between the institutions could be organized into the following three categories: organizational structure, technology and employees (administrators, faculty and staff).

*Organizational Structure.*

All three colleges chose to centralized-data management within the Office of Institutional Research. In this office, the institutional researchers maintained the database and conducted queries upon request from departments or program leaders. Institutional research staff also prepared general reports for distribution to the Board of Trustees, senior administrative leaders for assessing academic programs and college departments, as well as summary data for state and
federal regulatory agencies. In addition to printed reports, all the institutions maintained a website for public disclosure of performance data.

Centralization of the data management process coupled with establishing formal procedures for conduct data-driven decision making has proven benefits as documented in knowledge management literature (Leveille, 2006; Mills, 2006; Swan, 2009). A central data repository, such as that maintained by the institutional research department, offers the institution ready access to the data and most importantly ensures data integrity. However, the participants shared insights which brought to light some challenges in incorporating DDDM into the existing management hierarchy of the colleges. The participants reported that each college is experiencing some challenges in implementing a comprehensive data-driven decision-making approach that is supported by all administrative and departmental leaders and their teams. These cross-functional teams have not of yet constituted an environment that is fully collaborative and participatory. Organizations that have achieved a collaborative and participatory environment have been found in literature to be the best conditions for Knowledge Management practices to take hold ((Leveille, 2006; Mills, 2006; Ikemoto & Marsh, 2007; Swan, 2009).

Further, participants commented that the data volume had grown at such a rapid pace that in some cases the employees were feeling overwhelm. With the organizations experiencing such a rapid increase in data, data accuracy may be called into question. To perfect the reliability of data, it should be vetted through the filter of relevance at the department level if it is to be a satisfactory measure, and therefore useful for administrators, faculty and staff managers to use to enhance organizational effectiveness. This means that all institutional measures must be carefully selected, evaluated for relevance and trial tested for accuracy and repeatability. Also, to limit over saturation, the number of data items should be limited to a portfolio of fewer than
twenty data points. Limiting the quantity of data points to be used to measure institutional performance to a maximum limit will lower the likelihood that employees will be overwhelmed by the amount of data. This does not suggest that the institution rely solely on twenty or fewer measures to manage their community college. Instead it is highly recommended that the college maintain secondary databases at the department level that roll up to the central portfolio maintaining the institutional measures. It is to be expected that the department measures will also be screened for relevance, accuracy, and value.

**Technology.**

To streamline the data management process, the colleges have consolidated data management activities into the Office of Institutional Research. Comparing and contrasting the technology infrastructure at the three colleges, noticeable differences were observed. College A was equipped with a limited localized system, while College B and College C both possessed robust enterprise-wide systems to support their data storage and retrieval requirements. The later approach appears to be the most efficient option given the expected volume of data that will be generated as organizational members develop metrics to measure performance. It is important to comment at this point that assessing the operational capabilities of the existing informational technology systems were not within the scope of this study; however, anecdotal evidence suggest that College B and College C are making additional long-term investments to enhance their capabilities and improve the quality, timeliness and usability of the data captured. It is reasonable to assume that all three colleges will need to invest additional resources (i.e., capital, labor, and equipment) for infrastructure improvement to continue to meet their future analytical and reporting requirements.
Initially, when the participant sites began moving to an institutional effectiveness paradigm, the preferred management style was rather directive, with the president’s office leading the change effort at all colleges. However, findings of this study suggested the management approach at all the colleges is evolving. At College B and College C, they are relying to a greater extent on participative management style with a greater emphasis on delegation. These colleges have shifted responsibility for data management and reporting to lower levels of the organization in order to encourage data ownership at the departmental level. College A is still in the early stages of establishing a supporting infrastructure for data management and therefore remains more in the development stages of their DDDM implementation efforts.

With regards to using data as a control to improve the quality and delivery of academic services, College B and College C are developing performance scorecards and benchmarks for use by the employees and board of trustees to provide needed feedback and to serve as input to the strategic plan. These managerial changes will better inform organizational employees and lead to increase collaboration among the organizational members.

**Implications of Findings for Community Colleges.**

The findings reveal that for community colleges to integrate continuous improvement strategies; such as, data-driven decision-making, total quality management and system analysis the institutions must first assess their organizational structure, personnel and technology infrastructure. In regards to organizational design, the senior leadership team must evaluate the existing management hierarchy to determine if the role and responsibilities currently in place are adequately aligned to manage new tasks associated with data collection and integrity, access and
analysis. Organizations may have to add new positions or reconfigure existing positions to give organizational members the ability to focus attention where is needed to accomplish the stated tasks in manner that is efficient and effective.

With the addition of new positions, roles or responsibilities, the college president and their senior leadership team should prepare to lead the organization through a period of organizational change that will require organizational members to adopt new management skills. Thus, administrators, faculty and staff will need to be trained in the practice of continuous process improvement and data management. Special attention will need to be made in communicating to organizational members the necessity for timely and adequate data to make decisions and the essential art of data analysis. If data is to be relevant to decision making, organizational members need to perfect their skills in data calculation and trend analysis so that the results accurately depict the condition of academic programs and services.

Information technology systems must be assessed to ensure they have the capacity to handle the growth in the amount of data associated with the migration to a data-driven decision-making environment. Data systems will be stressed as new performance indicators are gathered from across the campus and added to the database. Information inquiries will raise as internal and external constituents access the database to obtain information to inform decision making. Further, data systems must support the college’s reporting requirements and be able to generate portfolios of data that can be viewed in multiple media formats (i.e., Internet, web-based or paper).

The recommendation is for community colleges to establish a formal data management program, in contrast to the existing ad-hoc procedures currently in place. The recommended program would consist of creating a central authority or task force composed of a multi-
disciplinary team representing senior administrators, department heads, faculty and staff members. The task force will be tasked with managing all data collection, analysis and reporting activities. The process they develop will be used universally across the college in support of evidenced-based decision making. Data generated by the college would be centrally housed by the Office of Institutional Research and they will also provide advisory services to help the task force and other organizational members develop key performance indicators.

**Research Guiding Question 3.**

*What are the data-driven processes and procedures used in the college?*

Not surprisingly, data-driven processes and procedures used at each participant college vary in scope and complexity. Although all three colleges have been AQIP participants for over five (5) years, College A is just beginning to define their processes and procedures while College B and College C have focused their attention on developing processes and procedures to collect and distribute data for use by internal and external constituents. All the colleges are still in the early stages of formally selecting a data portfolio of key performance indicators (KPIs) to be used to evaluate and assess the institution’s institutional effectiveness. Today, all participant colleges are generating data from various departments across the college. The data is suitable for local analysis to discuss department-level performance, but is not global enough to summarize the overall performance of the institution.

An additional area of concern by all three colleges is the data management practices. Even after five years of “implementing” an institutional effectiveness imitative, none has in place a comprehensive data management protocol or documented set of procedures that detail how data measurements (KPIs) will selected, collected, interpreted or reported. The knowledge management literature points out that as organizations move to a knowledge management
environment they all too often become caught and “stuck” in a singular focus of the process, the collection of data. Currently, this appears to be the case in all three circumstances.

The unintended consequence of this course of action has been the accumulation of a voluminous amount of data. Several respondents commented that they were challenged with managing the seemingly overwhelming amounts of data gathered at their institutions. The participants attributed their impediment in effectively using the performance data that has been gathered to several internal barriers. These internal barriers were: (a) a lack of a defined data management and analysis process and procedures; (b) need for additional professional development to learn how to work with the data; (c) insufficient funding for some data infrastructure improvements; and (d) lack of a common understanding of the accreditation requirements under AQIP which the institution needs to abide by.

The findings revealed that the colleges have not fully recognized that the integration of data into the decision-making process within an organization is in fact a knowledge management activity. It is this acknowledgement, by senior leaders within the corporation, that the successful integration of DDDM within the corporate culture is invariably linked to a clearly defined knowledge management process. In absence of a formal knowledge management process, the institution simply gathers a growing collection of fragmented and discrete data elements. While some data elements describe specific performance results of certain departments, the institution does not produce the needed summary analytics that offer critical insights of the overall institutional performance relative mission outcomes.

Implications of Findings for Community Colleges.

Community colleges seeking to adopt DDDM practices to enhance institutional effectiveness must first establish a formal knowledge management process with procedures to
organize their data streams to ensure relevance, as well as make the best use of the talents of their employees and existing data infrastructure. Having a definitive management process will assist academic leaders prioritize measures into two categories: (1) broader measures for assessing operational performance at the department level and (2) global measures that represent a limited number (less than twenty elements) of key performance indicators for assessing institutional effectiveness.

The knowledge management process begins at the data management step. The key indicators are identified or developed for each of the mission themes. Data is gathered systematically so as to create useful and relevant knowledge by combining data, information, blending with it the situational context to generate a descriptive representation of an event or program under study. After the data has been gathered it will be analyzed during the second stage. The data analysis work would take place at the department level and the data will be carefully evaluated to identify trends, outliers, and areas of best practice. At the conclusion of the analysis, the evaluated data would pass through to the data sharing stage where the information will be disseminated across the institution.

Therefore, college administrators with key actors such as the institutional researcher and department heads must design and quickly implement a non-complicated three stage knowledge management process. Quick implementation of a process brings a disciplined approach to all continuous process improvement activities and helps to operationalize the knowledge management process within a community college. As a result, there is less frustration among stakeholders and with all on the same page the institution can move forward in an untied effort. At this time, the college leaders also create meaningful institutional performance benchmarks
that are contextual in nature and flow from the mission objectives of the programs, departments, and key elements of the college’s strategic plan.

**Research Guiding Question 4.**

*Does the organizational culture facilitate or deter the use of data-driven decision-making processes and procedures to enhance institutional effectiveness?*

The organizational culture at the three participant colleges was found to facilitate the use of data-driven decision-making processes and procedures to enhance institutional effectiveness. Each college, by utilizing the training offered by the Higher Learning Commission Academic Quality Improvement Program (AQIP) crafted an understanding among administrators, faculty and staff of the importance of using data to inform decision-making. In conjunction with this specific training, college administrators at these three colleges have been successful in promoting greater collaboration among organizational departments to help build an institutional climate that moves away from a unit-centered focus to a focus on enhancing overall institutional performance. Admittedly, participants commented that organizational readiness to fully transition to a culture of continuous quality improvement and evidence-based decisions is still encountering slight resistance and thus is proceeding in a non-uniform manner. Most participants reported that the resistance can be linked to the overwhelming volume of data now collected and the employees not being equipped with the necessary skills to appropriately perform data analysis to support decision making across departmental boundaries. In spite of these challenges, all participants believed their colleges possessed the requisite commitment level to see the transition to an evidence-based culture through to completion.

Actions taken to date by the participant colleges have been structural, adding new positions or new responsibilities to departments in order to establish new norms and behaviors
among the employees. The college presidents have decided to centralize data management procedures within the Institutional Research department. Participants are very positive and feel centralizing data management responsibility within the Institutional Research department should improve readiness as data owners are identified and assignments are made for data collection and quality assurance. They also believe the continued expenditures by the institutions to further communications by way of online resources, internal communiqués, internal meetings and action projects will increase awareness among organizational members and further build support for the initiative.

The colleges are engaged in making continued refinements to their organizational environments to assist each employee in developing a personal mastery in using data to inform daily decision making and long-term planning. The essential goal is to move organizational members from the perspective of just reporting results to manipulating the data to extract new insights that will support strategic planning and day-to-day operations and decisions.

**Implications of Findings for Community Colleges.**

The past three decades have witness significant economic, social, technological and cultural change. It has been a period that has spurred organizational change and innovation throughout the higher education community. During this period of transition, academic leaders in community colleges have had to learn how to pivot seamlessly between numerous strategic management choices. To sustain relevance to the stakeholder they serve, community college leaders will have to continue to innovate and address any inhibitions in their organizational culture that could limit their readiness to embrace change or ultimately limit the integration of new initiatives as they are developed. To navigate the organization forward so that it continues to transform and incorporate the tenants of continuous process improvement and data-driven
decision making, the community college president and senior administrative team must continue to clarify mission objectives, disseminate information that explains how new initiatives support these objectives and manage the organizational culture to drive the formation of behaviors among the employees that supports all future efforts to enhance institutional effectiveness.

Purposeful examination of organizational culture should be made by the senior administrative team to assess the organization’s readiness to adopt data-driven decision making practices. Special attention should be paid toward: (1) reviewing role alignment of employees within the existing organizational structure, (2) reviewing employee recognition and incentive programs; (3) reviewing availability support resources (i.e., employee training), and (4) reviewing the commitment of senior level administrators to organizational goals. The assessment will assure that an appropriate organizational climate will exist to support the dissemination of DDDM practices throughout all levels of the organization. It is the quality of the organizational climate which becomes the necessary persuasive influence on the social interactions between individuals and groups needed to sustain and disseminate the initiative. College C demonstrated this effect as participants reported that their employees were exhibiting new behaviors by not only taken on new roles and responsibilities associated with data-driven decision-making across all departments, but also members of the institution begun integrating and training other organizational members on how to use higher-order quality improvement methodologies; such as Six Sigma to improve the quality of programs and academic services. Developing new behaviors across departmental boundaries develops a new capacity for learning and the ability to translate new insights into operating strategies that further enhance institutional effectiveness.
Callery Model for Knowledge Management

What is known is that each institution is distinguished by its own definition of excellence. However varied the missions may be, community colleges are obliged to respond to the requirements set forth by their stakeholders. These requirements constantly undergo transformation as the composition, needs and values of the constituents change. Further, these institutions face external social, economic, technological and political forces that constrain college operations by requiring institutions to focus their efforts and resources on the development of strategic programs designed to enhanced institutional effectiveness. Successful response to these forces will be linked to the senior leadership team’s ability to guide an organic process that involves the entire organization and entails a commitment of the senior leadership team to establish an acumen among institutional members that encourages the use of data to inform decision making.

What constitutes a sound institutional effectiveness approach is the creation of a data-driven decision-making (DDDM) process that can be adopted by community college senior administrators and assuredly communicate to all staff and faculty members. To arrive at a sound approach, relevant concepts from literature, empirical knowledge derived from practice, and the findings emerging from the study were integrated into a final model. Findings from this study provided important guidance to what is needed to implement an aggressive DDDM strategy as well as establish a comprehensive knowledge management process that will support the AQIP initiative. A fully integrated knowledge management process will improve data integrity and increase analysis capability among organizational employees. The study findings indicated need for a model to guide community colleges in this process. The Knowledge-management and Effectiveness Integration Model (KEIM) was developed as an integrated framework to assist
community college administrators’ move towards improving date-driven decision-making and institutional effectiveness.

**Knowledge-Management and Effectiveness Integration Model.**

The Knowledge-management and Effectiveness Integration Model (KEIM) maximizes the full use of management science principles and integrates knowledge management best practices to address the needs of community college leaders as they install key performance indicators to improve organizational effectiveness. The KEIM is comprised of three components that serve to enhance institutional adoption of the model: a) description of the core processes to establish appropriate key performance indicators, b) a KEIM implementation plan, and c) an implementation timeline. One of the most essential steps in the successful implementation of the KEIM is the establishment of a task force. This task force is the critical linchpin in the creation of a formal procedural approach to transform the organization to a data-driven environment. The task force will take the lead position within the institution coordinating all activities.

The KEIM is formed through the integration of three distinct core processes that are performed concurrently. The core processes are: (1) External Environmental Scan and Assessment; (2) Performance Data Analysis, and (3) Establish New Internal Climate. The execution of all three of the core process steps is important for generating relevant data that will inform decision makers and ensure better organizational effectiveness. Figure 21 illustrates the KEIM.
Figure 21. Knowledge-management and Effectiveness Integration Model (KEIM)

EXTERNAL ENVIRONMENTAL SCAN and ASSESSMENT

Environmental Scan
- Social/Economic
- Political
- Social

Board of Trustees Relations

Competitive Analysis (Benchmarking)

PERFORMANCE DATA ANALYSIS

Data Management

Analytical Review (Apply Expert Review)

Performance Review & Reporting

ESTABLISH NEW INTERNAL CLIMATE

Structure

Support

Commitment

Organizational Culture

Recognition

Standard

Responsibilities

7-Climate Change Levers

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Core Process 1: External Environmental Scan and Assessment.

The first process, External Environment Scan and Assessment consists of a comprehensive external assessment of the community college environment with an emphasis on emerging trends and conditions that could impact organizational effectiveness. Organizations continuously interact with social, political, and economic forces and therefore exist in a fluid and at times competitive alliance with their external environment. These forces influence policy formation and the operational requirements imposed by external stakeholders and the socio-economic environment. College leaders must routinely assess college work processes in order to improve efficiencies and maintain program quality. No community college can operate as an isolated entity and hope to remain competitive with for-profit and not-for-profit higher education institutions that also compete for limited public funds. Further, these colleges cannot remain relevant to the students, communities and businesses they serve unless they proactively monitor the changing needs and preferences of their stakeholders.

Environmental scanning provides visibility to the changing interests of policy makers and the needs of the college’s core constituents, students and members of the community. A comprehensive environmental scan should profile and identify current trends in higher education policy, changes in work force employment demands and requirements, and alterations in fiscal resources and allocations to support college operations. In addition, the scan defines new competitive program offerings from profit and not-for-profit institutions.

The overall objective of the scan is to identify potential focal issues that inhibit or could further enhance institutional effectiveness. A comprehensive external scan will update the college senior administrators on the relevant trends that will have a direct impact on college operations and the performance of the college against stated mission and strategic planning
objectives. Most importantly, the scan will provide the college’s leadership team with the information and data on which to base adjustments to the college’s strategic plan to satisfy stakeholder demands and requirements.

**Core Process 2: Performance Data Analysis.**

This process, *Performance Data Analysis*, represents the knowledge management phase of the model and consists of three sequential steps or tasks: a) data management, b) analytical review, and c) performance review and reporting. The execution of all three of the process steps is important for generating relevant data that will inform decision makers and lead to better organizational effectiveness. Together these three tasks ensure that the institution conducts data-driven decision-making in a consistent thorough manner.

*Sub-Task 1: Data Management.*

A complex function in the Performance Data Analysis process, *data management* is the first task in establishing data-driven decision making practices within the community college. It is a complex function in the *Performance Data Analysis* process. Within the function are activities associated with data collection, storage and retrieval, as well as the management of data infrastructure (hardware and software). Successful completion of this functional task requires multi-disciplinary and cross-departmental support from the institution’s institutional research, management information systems, academic and student services departments and other operational units.

Working together, the task force and department heads must assess all information technology and employee resources to ensure that the campus’ internal infrastructure can support the mission of becoming proficient across the entire college in the performance of data-driven
decision-making. A key assumption of the model is that the ultimate responsibility for data integrity will reside with the institution’s Institutional Research department.

Successful in the use of the model requires diligent work to limit the number of key performance indicators (KPIs) to a core set of measures that will serve to describe the overall institutional effectiveness and a supplement group of measures that department leaders can use to inform day-today decision making. The core group of KPIs should not exceed a total of twenty (20). The limited number of KPIs increases usability of the data results and ensures users that users will not be overwhelmed by too many data points to evaluate. It is important that the college provide training to all employees involved with KPI development, collection and evaluative analysis to ensure that they possess the requisite analytical skills to perform the required data analysis and reporting to stakeholders.

Sub-Task 2: Analytical Review.

The second task of the process, Analytical Review, is the iterative analysis phase where administrative and department leaders evaluate data results and derive conclusions regarding program and services effectiveness. During the Analytical Review, the task force will also review the key performance indicators (KPIs) selected to measure the institutional effectiveness of academic programs, services, and operations. Taskforce members work collaboratively with department leaders, faculty and staff. The examination of the data results will enrich their understanding of the conclusions and the implications for the department and the institution.

Sub-Task 3: Performance Review and Reporting.

The final task, Performance Review and Reporting, involves summarizing the data for presentation to department leaders and other stakeholders. Data is captured on a scorecard, which is a written portfolio or report of data results, conclusions and implications. The reports
will be generated quarterly and summarized annually. Information from the scorecard will provide insights to academic leaders with an assessment of program performance and will clearly identify areas of vulnerability or opportunity. Also, the findings can be used to assess the strategic plan and make recommendations for future priorities.

**Core Process 3: Establish a New Internal Climate.**

The third component of the model represents the essential foundation of the KEIM. It is important to establish a supportive organizational climate when transitioning to an evidence-based organizational culture.

Establishing a *New Internal Climate* is a vital responsibility of the senior academic team. Today, the senior leadership team must radically change their operating practices to shorten the time needed to restructure existing programs, design new program offerings, improve institutional operations, and adjust student support services to meet stakeholder requirements. Further, organizational leaders must balance the need to preserve the institution’s long-standing traditions, while simultaneously building internal coalitions that will be supportive of new initiatives, such as data-driven decision-making. Ultimately, the goal for department leaders will be to transform individual mind-sets and outdated group practices, so that everyone fully embraces the transition to an evidence-based culture.

The three processes, *External Environmental Scan and Assessment, Performance Data Analysis,* and *Establish New Internal Climate* represent the core internal processes of KEIM. Application of the model will improve data management which will in turn lead to greater data integrity and heighten confidence by administrators, faculty and staff in the use of data to inform decision making throughout the community college. A systematic plan for implementing the KEIM is provided to assist college leaders in its successful adoption.
KEIM Implementation Plan

To fully implement the KEIM, the following four (4) step plan was developed. The plan helps the college’s leadership team operationalize the Knowledge-management and Effectiveness Integration Model. The four sequential steps are: (1) Team Development; (2) KPI Selection and Canvassing; (3) Data Collection and Review; and (4) Program Review. The plan identifies specific roles and responsibilities, describes the activities, as well as a timeline for executing the KEIM. Having defined implementation steps and a formal time line provides the community college leadership team a framework for assessing their organization’s progress toward full implementation and integration of DDDM into their management practices and traditions. Figure 22 displays the four step KEIM implementation plan.

Figure 22. The KEIM Implementation Plan

Step 1 Team Development (Task force).

During Team Development phase, the community college leadership team forms a DDDM task force. The length of time needed to form the task force will vary among community colleges and will depend on the abilities of the organization’s employees to function within an environment committed to continuous quality improvement and evidence-based decision-making. The greater the number of employees with a working knowledge of total quality
management techniques the shorter will be the time period needed to form a working team to coordinate DDDM integration throughout the college.

A cross-departmental task force of senior administrators, department leaders, faculty members, and staff representatives is created to assume several responsibilities that support the establishment of a lasting culture of evidence. The task force will serve as the data management authority across the entire campus, it will support and coordinate the activities of department leaders who are responsible for developing, collecting, and completing an evaluative analysis using the key performance indicators (KPIs). In addition, by creating the task force, the leadership team puts in place a group that can provide needed oversight of the accuracy and relevance of data results and that can serve as the primary author of the performance scorecard, which will be seen by internal and external stakeholders.

Once formed, the task force will be introduced to the Board of Trustees and to the institution. Briefings, that familiarize, task force members with the college’s annual strategic priorities should also take place. Meetings with the Board of Trustees will provide an opportunity for members of the task force to explain the new strategic approach to data management and performance reporting. This is an endeavor to gain support early on for the use of the KEIM. Establishing commitment at the highest level of the organization is one of the best practices for creating an appropriate climate to gain acceptance for a new initiative. Further, receiving a commitment from the board could open a gateway to outside technical assistance, for example the hiring of a consultant information technology specialist and/or research professionals with the needed expertise to assist the college in performing the information technology resource assessment.

The following activities are key tasks that occur within *Team Development:*
1. Selecting task force members;

2. Assessing, in partnership with the Institutional Research department, existing capabilities of the data infrastructure including (data storage capacity, querying capabilities and visibility), in order to confirm that the existing computer systems have the capacity to handle future data inquiries;

3. Assessing data management capabilities of task force members, administrators, faculty and staff in order to identify data analysis skill gaps and develop training programs to address the identified gaps.

**Step 2  KPI Selections and Canvassing.**

The task force is responsible for establishing the portfolio of key performance indicators (KPIs) to be used to assess overall institutional effectiveness for the college. They will review with senior administrators and department leaders existing data sources, core indicators and collection methods to understand the current-state of data management. At the conclusion of the canvassing, KPIs will be developed that represent quantitative and qualitative measures and serve to describe the performance of the college’s various programs and services.

The canvassing effort will begin at first by evaluating currently available data from sources, such as the National Community College Benchmark Project and from peer institutions. The preliminary screening of this data will reveal commonly accepted KPIs among community college leaders that can be vetted by the task force and then supplemented with custom KPIs specific to the particular college. Working closely with department heads, the task force will develop a focused list of up to 20 KPIs that will become the primary measures to assess the overall effectiveness of the institution. Other department measures can also be developed, but these extra indicators are only relevant to specific departments and will be used by employees
within that department to inform operational decisions. The completed list of KPIs will be forwarded to the Institutional Research department to be added to databases to ensure the pertinent data is captured.

The task force will identify additional data owners within the college to assist with data gathering, calculations and generate preliminary reports of the early findings. These reports will be forwarded to the task force for final review. The task force provides a vital role as “gate keeper” by helping to control the volume of data generated. This control ensures that department employees are not overwhelmed by large volumes of data; they are then better able to use data to assess the performance of the department and in turn the college.

Step 3 Data Collection and Review (12 months and ongoing).

Data Collection and Review will take place throughout the year and will coincide with the annual budget and accreditation reporting dates. Data collection is not limited to the core institutional performance indicators. Departments are expected to continue collecting data to evaluate and improve their operations, services or academic programs. The task force will offer both technical expertise to assist with all these department activities. Data owners will be responsible for confirming the accuracy of KPIs and reporting data results to the Institutional Research department, which consolidates all data and prepare summary reports for review by the task force, senior administrators and department heads.

Step 4 Program Review (at the end of the academic year).

At the conclusion of the twelve-month cycle, the senior college administrators will supervise the Program Review task. During Program Review, the senior administrators will identify areas for improvement and ways to streamline the overall management process. Working with the task force, senior administrators will survey department leaders about data
collection procedures to determine whether or not procedures need revision. Stakeholders are also be surveyed to learn if the data reports provide information necessary to inform decision making and to assess programs and academic services. Finally, the task force will assess whether or not additional investment, in physical (e.g., computers hardware or software) or labor (e.g., consulting services) resources, will be needed to support future data management requirements.

**KEIM Implementation Timeline.**

The *KEIM Implementation Timeline* provides a visual representation of the core implementation steps. Having a sequential model helps senior administrators align physical and human resources to improve the likelihood of the successful integration of a new strategic initiative, such as, DDDM into their organizational culture. Figure 23 illustrates the timeline for the KEIM implementation plan.
Recommendations for Future Research.

The future of higher education will certainly be fluid and challenging as the institutions continue to move along a continuum that further integrates business management techniques into their institutional culture. Integrating data-driven decision-making practices into the organizational culture will be vital for assisting community colleges in achieving greater organizational efficiency and effectiveness.

This research utilized theories and concepts of total quality improvement, organizational development and knowledge management to develop a comprehensive model for community
colleges which can assist them with in their transition to a culture of evidence. Additional studies using these same theories and concepts can add to the limited body of literature in the community college field. In particular, these studies could explore other areas regarding the impacts of organizational change as community college leaders expand their use of business-centric management techniques to govern their institutions.

Another important study would be to evaluate how and in what ways community college department heads use data to improve program performance. Findings from the study could describe how key performance indicators (KPIs) are selected and how they are commonly used across community colleges within the same state or region to continually improve programs. Findings from such a study could reveal common analytical approaches and KPIs used by multiple colleges to manage college operations, services and academic programs.

Another research study of particular interest to community colleges could be the applicability of specific KPIs as a monitor of student success in particular programs. At this time, great emphasis is placed on community colleges to increase student persistence, transfer and graduation rates. Findings from such a study could reveal insights on methods for improving the pedagogical paradigm employed by faculty.

In addition, a follow-up study based on this research could be conducted by the Institutional Research departments at AQIP colleges to examine the current “best practices” for implementing evidence-based decision making in service and operational departments. Findings could reveal additional aspects of data infrastructure design considerations that would facilitate data management, retrieval and analysis used to support operational decisions that positively impact prescribed outcomes.
As a continuation of this research, a similar study could be conducted that sampled additional colleges from each of the Higher Learning Commission Regions. Enlarging the sample of participants from across the country could reveal new factors that are region specific. Findings could uncover additional best practices that would be useful to community colleges, large and small, urban, suburban and rural who are becoming engaged in the Academic Quality Improvement Program (AQIP) that would assist them during the first few years.

With many more community colleges aggressively undertaking a more evidence-base and data driven approach to management, a better understanding of how they can accomplish this is needed. It is the sincere hope of this researcher that further studies on community colleges and their move to a more integrated continuous quality improvement approach will continue. The insights and understanding which can be obtained from scholarly research such as this can only enhance their efforts.
References


Aliff, J. V. (1996b). Implications of the Fourteen Points of Total Quality Management (TQM) for Science Education. 57th Annual Meeting of the Association of Southeastern Biologists (pp. 2-8). Statesboro: Georgia Southern University.


Appendices

Appendix A: Letter to Solicit Site Participation in the Study

[DATE]

[PARTICIPATING SCHOOL’S ADDRESS]

President Name,

I am writing to introduce you to [RESEARCHER], a student in National Louis University’s Community College Leadership doctoral program. The program is intended to engender a broad understanding of community colleges by encouraging focused scholarly inquiry grounded in the reality of leadership and administrative practices.

For his dissertation, [RESEARCHER] is conducting a multi-state research study of AQIP member colleges and would like to have your community college participate in this study. His goal is to identify the data driven decision-making processes and procedures utilized by community colleges to enhance institutional effectiveness. For this study, he would like to interview your Vice President of Academic Affairs, an Academic Dean, and the Faculty council president (or the equivalent people at your institution). I believe the information [RESEARCHER] gathers from this study will be important to other AQIP colleges and add to the body of academic research regarding the management strategies utilized by community colleges to guide data-driven decision making within their colleges.

[RESEARCHER] brings with him a solid background in higher education. He currently is a tenured faculty member at Malcolm X College, one of the seven City Colleges of Chicago where he also serves as Program Chair for the Business and Computer Information Services Programs. Prior to coming to Malcolm X College, [RESEARCHER] served as an adjunct instructor for several Chicago-area colleges and worked as a management consultant for ten (10) years. He is also a graduate of the University of North Carolina at Chapel Hill.

I urge you to give Adam your support by participating in his study. He has provided a disclosure statement (enclosed) for your review. [RESEARCHER] will contact you during the week of March 13th to see if you have any questions regarding the study. If you accept this invitation to participate, he will schedule seventy-five (75) minute interviews between the weeks of March 29th and May 1, 2010. You can contact [RESEARCHER] at [CONTACT TELEPHONE NUMBER or by email at [EMAIL ADDRESS].

Sincerely,

Stephen D. Spangehl
Vice President for Accreditation Relations

Enclosure: Disclosure Form (to be returned directly to [RESEARCHER])
Appendix B: Informed Consent Form

Thank you for agreeing to participate in this study that will take place from October, 2009 to January, 2011. This form outlines the purposes of the study and provides a description of your involvement and rights as a participant.

I consent to participate in a research project conducted by [RESEARCHER], a doctoral student at National-Louis University, located in Chicago, Illinois. I understand the study is entitled: *Sustaining progress toward enhanced institutional effectiveness: Modeling the process for integrating data-driven decision making practices within community colleges*. The purpose of this study is to identify the data driven decision-making processes and procedures utilized by community colleges to enhance institutional effectiveness.

I understand that my participation will consist of audio recorded interviews lasting 60 to 90 minutes with a possible second, follow-up interview lasting 60 to 90 minutes. I understand that I will receive a copy of my transcribed interview at which time I may clarify information.

I understand that my participation is voluntary and can be discontinued at any time until the completion of the dissertation.

I understand that my anonymity will be maintained and the information I provide confidential. I understand that only the researcher, [RESEARCHER], will have access to a secured file cabinet in which will be kept all transcripts, audio recordings, and field notes from the interview(s) in which I participated.

I understand there are no anticipated risks or benefits to me, no greater than that encountered in daily life. Further, the information gained from this study could be used to assist community colleges in become more effective in their strategic planning processes.

I understand that in the event I have questions or require additional information I may contact the researcher: [RESEARCHER’S CONTACT INFORMATION]

If you have any concerns or questions before or during participation that you feel have not been addressed by the researcher, you may contact my Primary Advisor and Dissertation Chair: [DISSERTATION CHAIR’S CONTACT INFORMATION]

Participant’s Signature:_________________________ Date:_________

Researcher’s Signature:_________________________ Date:_________
Appendix C: Organization Culture Assessment Questionnaire

(Use the “gray boxes” to record your responses and save the file)

1. Name:

2. Title:

3. Community College:

4. Years Employed By College:
   (If less than 1 year fill in number of months, __ mos.)

Questions 5-19. Place the cursor over the gray box next to the response that best matches your opinion and press the left button on your mouse. Afterwards, move forward to the next question.

5. Cooperation across different parts of the organization is actively encouraged.

   [ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

6. Administrators, faculty, staff, support personnel work like they are part of a team.

   [ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

7. Teamwork is used to get work done rather than hierarchy

   [ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

8. Teams are our college’s primary building blocks.

   [ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree
9. Work is organized so that each person (administrators, faculty, staff, support personnel) can see the relationship between his and her job and the goals of the organization.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

10. Our approach to doing business is very consistent and predictable

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

11. People from different parts of the organization share a common perspective

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

12. It is easy to coordinate projects across different parts of the organization

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

13. Working with someone from another part of this organization is like working with someone from a different organization

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree
14. There is good alignment of goals across college levels and departments

- [ ] Strongly Agree
- [ ] Agree
- [ ] Disagree
- [ ] Strongly Disagree

15. Student and community comments and recommendation often lead to changes.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Disagree
- [ ] Strongly Disagree

16. Student and community input directly influences the college’s decisions.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Disagree
- [ ] Strongly Disagree

17. All members (administrators, faculty, staff, support personnel) of the college have a deep understanding of student and the community wants and needs.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Disagree
- [ ] Strongly Disagree

18. The interests of students and the community often get ignored in our college’s decisions.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Disagree
- [ ] Strongly Disagree

19. We encourage direct contact with students and the community by our administrators, faculty, staff and support personnel.

- [ ] Strongly Agree
- [ ] Agree
- [ ] Disagree
- [ ] Strongly Disagree
20. There is widespread agreement about the college’s goals.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

21. The college’s president and senior administrators set goals that are ambitious, but realistic.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

22. The college’s president and senior administrators have “gone on record” about the objectives the college is trying to meet.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

23. The college’s president and senior administrators continuously track the college’s progress against our stated goals

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

24. Administrators, faculty, staff and support personnel understand what needs to be done for the college to succeed in the long term

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree
25. The leadership style of the president and senior administrators can best be described as:

☐ Mentor, ☐ Entrepreneurial, ☐ Coordinator, ☐ Producer,
Facilitator Innovator Organizer Hard-driver

26. The traits that bind the organization together can be described as:

☐ Loyalty, ☐ Innovation, ☐ Rules, ☐ Goals
Tradition Development Policies Accomplish

27. Additional comments:

(WHEN COMPLETED SAVE THE FILE AND EMAIL COMPLETED FORM TO [RESEARCHER'S EMAIL ADDRESS])
Appendix D: Research and Interview Questions

Study Purpose:
*Characterize the data-driven decision making processes and procedures utilized by community colleges to enhance institutional effectiveness*

<table>
<thead>
<tr>
<th>Count</th>
<th>Research Question</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>What were the motivating factors identified by community college administrators which brought to light the need for enhancement of institutional effectiveness?</td>
<td>What were the reasons your college adopted AQIP as a means for enhancing institutional effectiveness?</td>
</tr>
<tr>
<td>2.</td>
<td>How and in what ways was the data-driven quality initiative implemented?</td>
<td>Who were the architects and champions that planned and implemented AQIP at your college?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How did the organizational structure change as a result?</td>
</tr>
<tr>
<td>3.</td>
<td>What are the data-driven decision processes and procedures used in the college?</td>
<td>What are the processes or procedures that have been critical in facilitating the organization in implementing the change toward data-driven decision-making?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What were the barriers found as the college moved to AQIP to enhance institutional effectiveness?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How are the data-driven decision-making measures, processes, practices communicated throughout the organization?</td>
</tr>
<tr>
<td>4.</td>
<td>Does organizational culture facilitate or deter the use of data-driven decision making processes and procedures to enhance institutional effectiveness?</td>
<td>How does the organizational culture support or inhibit the use of AQIP and data-driven decision making philosophy?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How would you characterize the organizational culture before and after the adoption of data-driven decision practices foster by AQIP?</td>
</tr>
</tbody>
</table>
Appendix E: Transcriptionist/Editor Confidentiality Form

This confidentiality form articulates the agreement made between [RESEARCHER’S NAME], the researcher, and [NAME OF INDIVIDUAL AND COMPANY OF A PROFESSIONAL TRANSCRIBER].

I understand and acknowledge that by transcribing the audio files provided to me by [RESEARCHER], that I will be exposed to confidential information about the research study and the research participants. In providing transcription services, at no time will I reveal or discuss any of the information of which I have been exposed.

In addition, at no time will I maintain copies of the electronic or paper documents generated. Further, upon completing each transcription, I agree to provide the electronic and paper documents to the researcher:

[RESEARCHER’S CONTACT INFORMATION]

I understand that breach of this agreement as described above could result in personal and professional harm to the research participants for which I will be held legally responsible.

Transcriptionist’s Signature:____________________________________
Date:___________

Researcher’s Signature:________________________________________
Date:___________