A study of how culture, collaboration, and advocacy influence data-driven decision making at community colleges

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A study of how culture, collaboration, and advocacy influence data-driven decision making at community colleges

by

Marvin Leo DeJear Jr.

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Educational Leadership)

Program of Study Committee:
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Larry Ebbers
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Iowa State University
Ames, Iowa

2016

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DEDICATION

This dissertation is dedicated to God, my wife, and my family.

To God, I give all the glory for carrying me through the darkest of times and allowing me to even be here now, for a season, writing this dissertation. To my wife, Deidre, who provided me with support and encouragement throughout this journey! Thank you for putting our lives on hold, keeping me accountable to the end of this process, and allowing me the space to complete this mission. To my parents, Marvin Sr. and Carolyn, for always believing in me and letting me think I had the ability to do anything I ever wanted to do. To my brother, Marshall, for always being my ride or die through whatever we encountered. To my aunt, Connie, for showing me that a Ph.D, was attainable and providing me a road map to follow. To my nephews and nieces, always believe in your dreams and never let life stop you from accomplishing whatever you want.
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ABSTRACT

Data-driven decision making (DDDM), or the use of data to inform educational practices, has become an emerging field of interest over the past decade for educational leaders and researchers (Mandinach and Gummer, 2013). With increased pressure for accountability and improved outcomes by educational institutions, agencies from the federal to the local level have adjusted policies accordingly. National discussions about education reform are replete with calls for more transparency, stronger accountability, improved outcomes, and a more efficient use of public resources (Achieving the Dream, 2012). Advancements in technology have given educators improved access to data, making it easier to retrieve and analyze information. Policy makers at all levels are being pressured to create an evidence-based culture and have been setting benchmarks to create the accountability needed for this culture to grow. All of these goals require good data about student achievement that are more detailed, accurate, and accessible than any state currently has available (Achieving the Dream, 2012). The purpose of this study was to determine the level of data literacy among the leaders of the 15 Iowa community college districts. The researcher examined the relationship between student completion and factors such as collaboration, advocacy, data-driven decision-making, and culture at the 15 Iowa community college districts. The quantitative findings from this study support the use of data-driven decision making in post-secondary education. Implications for policy, practice, and future research are presented.
CHAPTER 1. INTRODUCTION

Introduction

Community colleges are the key to the future of the United States of America. With nearly half of all undergraduates attending community colleges in America, the completion rates of these students are critical for the success of our country in the twenty-first century. The number of students attending and completing associate degrees at two-year colleges rose by more than 50 percent between 1999–2000 and 2009–10 academic years (National Center for Education Statistics [NCES], 2012). America for generations led the world in college completion, but now ranks 16th in the world for the ages of 25–34 year olds (AACC, 2012). By 2018, nearly two-thirds of all American jobs will require a post-secondary certificate or degree (AACC, 2012). More recent analyses indicate that the United States has been under-producing graduates with post-secondary skills since at least 1980, and, in the process, contributing substantially to income inequality (AACC, 2012). Community colleges can help to be the solution to the skills gap and the huge disparities in income equality that are ever growing in our country.

Data-driven decision making (DDDM), or the use of data to inform educational practices, has become an emerging field of interest over the past decade for educational leaders and researchers (Mandinach & Gummer, 2013). With increased pressure for accountability and improved outcomes by educational institutions, agencies from the federal to the local level have adjusted policies accordingly. National discussions about education reform are replete with calls for more transparency, stronger accountability, improved outcomes, and a more efficient use of public resources (Achieving the Dream, 2012). Advancements in technology have given educators improved access to data,
making it easier to retrieve and analyze information. Policy makers at all levels are being pressured to create an evidence-based culture and have been setting benchmarks to create the accountability needed for this culture to grow. All of these goals require good data about student achievement that are more detailed, accurate, and accessible than any state currently has available (Achieving the Dream, 2012).

**Data-driven decision making in post-secondary education**

Data-driven decision making is something relatively new to the world of education, especially for post-secondary education. Responding to calls for increased accountability from policymakers, accreditation agencies, and the public, colleges and universities are beginning to use evidence-based practices to improve student success to design, manage, and improve educational programs and services (Jenkins & Kerrigan, 2008). “Building a culture of evidence” to improve student success requires fundamental changes in the way that faculty, administrators, and support services staff use student data in decision making (Jenkins & Kerrigan, 2008). Starobin and Upah (2014) stated that from a statewide perspective, four key elements are critical for promoting and fostering the culture of data literacy. They are (1) leadership and vision; (2) stakeholders; (3) data governance; and (4) connecting policy and data.

In fields as such as business and medicine, multiple, rich data sources have been analyzed to identify patterns, predict outcomes, and yield more informed decisions (Hersh, 2002; Ngai, Xiu, & Chau, 2009). While educators have been attracted to the successful application of data in these other fields, “the use of analytics within the education sector is still in its infancy” (MacNeill, Campbell, & Hawkseye, 2014). Reinforcing this observation, in a recent EDUCAUSE survey, researchers found that a
majority of higher education institutions are collecting data, but not using the gathered information for predictive or actionable decisions (Bichsel, 2012). Data-literate educators continuously, effectively, and ethically access, interpret, act on, and communicate multiple types of data from state, local, classroom, and other sources to improve outcomes for students in a manner appropriate to educators’ professional roles and responsibilities (Data Quality Campaign, 2014a).

Researchers have formed different definitions of data and understandings of data’s emerging uses in education. One such example is from the EDUCAUSE Center for Applied Research (Bischel, 2012). Their report proposed that analytics is a qualified term, defined as the use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues (Bischel, 2012). Community college leaders in the twenty-first century have to begin building an environment that will allow analytics to strategically drive decision making. Bischel, the author of the EDUCAUSE survey, believes analytics are a process with five basic steps (Bischel, 2012). That same survey helped to identify barriers to achieving success with analytics. A few of the identified barriers were culture, lack of collaboration, and policy. (Bischel, 2012). This emerging complex approach to data-driven accountability and focus on data-driven decision making are key to student success. This is critical when student success and completion is in decline, particularly for at-risk demographics such as underrepresented, first-generation, and disenfranchised student populations. Data-driven decision making, if harnessed properly and in conjunction with collaboration and advocacy, can begin to close these gaps in degree completion.
Data-driven decision making in Iowa post-secondary

To better understand the history of Iowa post-secondary data-driven decision making efforts, I decided to seek out someone recognized not only as the leading expert in the state of Iowa but recognized as a national expert in regards to community colleges across the country: Dr. Larry Ebbers of the Office of Community College Research & Policy at Iowa State University.

In my conversation with Dr. Ebbers, he proceeded to tell me the history of the data-driven decision making in Iowa’s 15 community college districts. He told me that data-driven decision making in Iowa community colleges was still in its infancy and was less than a decade old when the efforts first began in 2009 (L. Ebbers, personal communication, November 29, 2016). In 2009, Iowa community colleges started to use the Community College Survey of Student Engagement (CCSSE) created and utilized by the Center for Community College Engagement at the University of Texas (L. Ebbers, personal communication, November 29, 2016). The CCSSE is a well-established tool that helps institutions focus on good educational practice and identify areas in which they can improve their programs and services for students (Center for Community College Student Engagement, 2016). Dr. Ebbers stated “Iowa community colleges will complete the CCSSE every three years” (L. Ebbers, personal communication, November 29, 2016).

He went on to say that “when the State of Iowa passed legislation to fund Adult Basic Education (ABE) in the State of Iowa for the first time in 2012, it changed the landscape for data-driven decision making in Iowa community colleges” (L. Ebbers, personal communication, November 29, 2016). Iowa had been one of the last three states to not fund Adult Basic Education (ABE) in the country (L. Ebbers, personal
communication, November 29, 2016). They funded Adult Basic Education (ABE) in the form of what would be called PACE, standing for Pathways for Academic Careers and Employment. He stated, “Initially … the Iowa community college presidents and their respective teams met to discuss what the defined outcomes would be and what would be the best model to follow for tracking the outcomes being requested by the State legislators” (L. Ebbers, personal communication, November 29, 2016). The presidents and their teams decided to go about it on their own and customize the accountability and tracking that all the colleges would follow for reporting to the State of Iowa for the PACE and English Language Learning (ELL) funding (L. Ebbers, personal communication, November 29, 2016).

In 2015, the presidents decided to move away the customized approach to reporting and decided to report out on the Voluntary Framework of Accountability (VFA) system through the AACC 21st Century Initiative (L. Ebbers, personal communication, November 29, 2016). The Board of Regents that covers the State Universities—Iowa State University, University of Northern Iowa, and the University of Iowa—have been meeting with Dr. Kay McClenney, who has been the Director of the Center for Community College Student Engagement at the University of Texas, every two years since 2013 (L. Ebbers, personal communication, November 29, 2016). Dr. Ebbers said, “She will be back in 2017 to continue the process of implementing data-driven decision making at the community colleges” (L. Ebbers, personal communication, November 29, 2016).
American Association of Community Colleges’ 21st-Century Initiative

In response to President Obama’s education agenda and challenge for community colleges to educate an additional five million students with degrees, certificates, or other credentials by 2020, the American Association of Community Colleges (AACC) is leading advancement of the next era of community college evolution through its four-phase 21st-Century Initiative (AACC, 2016). Phase 1 was a listening tour for the AACC from 2011–2012. They went on the road and gathered information on student access, accountability, what AACC could do for its members, and big ideas for the future. They listened to 1300 stakeholders and visited 10 regions. Phase 2 consisted of forming the 21st Century Commission on the Future of Community Colleges from 2011–2012. The commission was asked to safeguard the fundamental mission of the community college and to challenge community colleges to imagine a new future. 38 thought leaders participated in this process, resulting in the report “Reclaiming the American Dream: Community Colleges and the Nation’s Future Commission Report,” which included seven recommendations and produced 22 strategies for community colleges to consider for the twenty-first century. Phase 3 consisted of developing the Implementation Action Plan from 2012–2014. The commission focused on building a bridge between the commission recommendations and specific implementation strategies. This consisted of 112 community college leaders, a steering committee, nine implementation teams, and the development of the final implementation report. They also developed the AACC strategic plan for 2013 to 2016. Phase 4 consisted of facilitating and supporting the transformation of twenty-first century community colleges. They released the implementation guide and launched the AACC 21st Century Center.
This Center will be a resource to help facilitate the implementation of the 21st-Century Initiative (AACC webpage, 2016).

Throughout the 21st Century recommendations and strategies, student success is the main goal driving the direction of the 21st-Century Initiative. It also very clear that utilizing data for decision making is key to making all of the recommendations and strategies by the 21st-Century Initiative become reality. Data-driven decision making has established itself as part of the conversation over the past 15 years for educational leaders and researchers. From K–12 to post-secondary, leaders in education have had to become more accountable for their actions and outcomes for students’ success. This is recognized by the AACC and its goal of making Community Colleges and its leaders ready for the twenty-first century.

**The role of the twenty-first century community college leader**

In 2013, the American Association of Community Colleges (AACC) released its second edition of *Competencies for Community College Leaders*. This resource has served as the foundation for developing many curricula for two-year colleges “grow-your-own” and community college leadership doctoral programs (*AACC Competencies for Community College Leaders*, 2013). It has become recognized as the standard for what community college leaders should look like for a majority of institutions around the country. AACC felt it was necessary to update these competencies to ensure the twenty-first century skills needed by community colleges were ready and in place, enabling colleges to become more fluid and responsive to students’ needs (*AACC Competencies for Community College Leaders*, 2013).
The 21st-Century Implementation Team, charged with making recommendations for a new framework for leadership, drew the following four major conclusions: 1) successful leaders move institutions to achieve high and improving student success rates; 2) community colleges need dramatic steps, as well as a greater sense of urgency and alignment, in order to change student success results; 3) expectations and priorities for leadership must shift to accountability for improving student success; and 4) deliberate preparation is needed in order to produce leaders with the right competencies, particularly competencies in risk-taking and change management (AACC Competencies for Community College Leaders, 2013). Understanding data analytics and their effective implementation can assist community college leaders in meeting the expectations outlined in this new framework.

The 21st-Century Implementation Team stated that new and emerging leaders must have the skills necessary to develop realistic, concrete, and actionable responses to their institutions’ complex issues, in order to provide employers with a skilled citizenry (AACC Competencies for Community College Leaders, 2013). They feel these revised competencies are more important than ever, due to the current leadership crisis that two-year colleges are facing (AACC Competencies for Community College Leaders, 2013). According to Compensation and Benefits of Community College CEOs: 2012, compiled in partnership with the Association of Community College Trustees (ACCT), 75 percent of respondents planned to retire within the next 10 years (AACC Competencies for Community College Leaders, 2013). In addition to a loss of 75 percent of current CEOs, institutions are projected to lose a large number of senior administrators and faculty members (AACC Competencies for Community College Leaders, 2013). These updated
competencies will provide a roadmap for future board and executive-level administrators in determining the desired skill sets of their next leadership hires.

The five major revised and updated categories for emerging leaders outlined by the 21st-Century Implementation Team are important for current leaders to utilize. These categories define specific competencies under the five major categories that a leader should possess at certain milestones of their leadership roles. The five major categories include: 1) organizational strategies, 2) institutional finance, research, fundraising, and resource management, 3) communication, 4) collaboration, and 5) community college advocacy (AACC Competencies for Community College Leaders, 2013). For all five of these AACC competencies, student success or student opportunities are mentioned in each one. Opportunities for students and improving student success are integral aspects of what will define an effective twenty-first century leader at community colleges. For the purposes of the current research, we look at how the perceived data culture of administrators correlates with student success, focusing on four components highlighted in the competencies outlined by the 21st-Century Implementation Team: organizational strategies, institutional finance, research, fundraising, and resource management, as well as collaboration and community college advocacy. Data-driven decision making is the key to allow twenty-first Century leaders to effectively implement evidence-based programming and ensure students’ future success.

Current state of community college completions in the United States

While students’ aspirations to attend community colleges are at an all-time high, in contrast, the low number of students completing their time at community colleges with a certificate or an associate’s degree has become an urgent problem in American
education and the future economy. Baby boomers’ retirement should create a steady stream of replacement openings for college-educated workers; by 2020, for example, there will be 40 million college-educated baby boomers between the ages of 55 and 75 (Aspen Institute, 2016). However, the United States is not currently producing enough workers with post-secondary education to replace these aging workers (Aspen Institute, 2016). By 2018, the percentage of jobs requiring post-secondary training will increase to 63 percent, but almost half of these jobs will only require an associate’s degree or some college (Georgetown CEW, 2014). (The term some college is not clearly defined in the literature.) Six leading national higher education organizations have joined in a completion commitment, setting the goal to produce an additional five million post-secondary certificates and associate degrees by 2020 (Price & Tovar, 2014). The organizations include American Association of Community Colleges, Association of Community College Trustees, Phi Theta Kappa Honor Society, League for Innovation in the Community College, National Institute for Staff and Organizational Development, and Center for Community College Student Engagement (Price & Tovar, 2014). They do not have a clear set definition of student success, but if you infer the 50% increase in credentials and associates degrees by 2020 and the closing American skills gap to have people work-ready, you can start to see a trend among the organizations committed to improving the completions and outcomes of community college students (AACC, 2014). The Lumina Foundation just recently released its strategic plan for 2017-2020. It has a goal that 60% of Americans will hold degrees, certificates, or other high-quality postsecondary credentials by 2025 in order to meet our nation’s growing need for talent (Lumina, 2016). They continue the trend of including certificates and certifications along
with associates’ degrees as this evolving definition of student success. The Georgetown Center on Education and the Workforce has expanded some college to mean that people could have their associate’s degree or a certificate from a college but not a four-year degree (Georgetown CEW, 2012). It is safe to say there is not an overall agreed-upon definition for what student success looks like. Locally here in Iowa, they recently released their Future Ready Iowa Alliance for the future workforce of Iowa (IWD, 2016). They have a goal that 70% of Iowans in the workforce will have education or training beyond high school by 2025 (IWD, 2016). They continue the trend of having some type of post-secondary certification, certificate, or degree account for success. For the purposes of this study, when we are discussing student success, we will define it as a student earning a community college certification, certificate, or associate’s degree along with upgrading in work readiness skills in alignment with current industry needs.

Community college administrators need to understand how data may also help low-income students to complete their studies at community colleges. These students will have an improved chance to rise above their current income status and increase their overall wealth. A significant amount of resources has been invested in research and programs to help improve the access of low-income students to community colleges and post-secondary opportunities, but the success rates of these students have not improved compared to their wealthier peers (Smart, 2006). The data that is now available and increasingly easier to obtain through commercial products provides a golden opportunity for community college leadership to address this specific population (Smart, 2006). This is a critical time for community college leader’s staff, faculty, and other institutional decision makers to embrace data-driven decision making and utilize data to enhance
current strategies and create new processes to improve student success. More importantly, use of the rich amount of data available may have an important impact on our country’s future workforce.

A recent report by AACC checking on the current state of degrees and certificates being awarded by community colleges in the show there is a promising trend of growth but shows there is still a long way to go. By the end of the 2013–14 academic year, nationally community colleges awarded approximately 1,175,000 degrees and certificates. This is an increase since the pledge was taken by the AACC and five other organizations in 2009 to strive towards the 50 percent increase of completions goal for 2020. When you look at the overall enrollment of nearly 13 million students in community colleges this is only a nine percent completion rate. The report showed that if this current trend continues the community colleges will come within 95 percent of the necessary degrees awarded towards the 2020 goal and completing in 2021 (AACC, 2015). Enrollment numbers are rising across our nation’s community colleges, but completion rates remain unreasonably low (Achieving the Dream, 2012). Reformers are focusing on the importance of using comprehensive, high-quality data on student progress and completion to bring about change (Achieving the Dream, 2012).

Statement of the problem

Data-driven decision making and data analytics are emerging best practices, but there is a lack of digital literacy among leaders at the community college level. Our country expects community college leaders to be able to make evidence-based decisions that will impact the future economy of our country by filling a middle-skills labor shortage and improving student success. This area of research has even greater impact
now that it has become a focal point of our current president’s agenda and of several leading foundations in the country, such as the Lumina Foundation, Bill and Melinda Gates Foundation, Annie E. Casey Foundation, Kellogg Foundation, and Kresge Foundation, among others.

A twenty-first century leader has to be able to incorporate data analytics into their daily routine and the culture of the college. With the ever-growing achievement gap and declining completion rates at community colleges for low-income students, data-driven decision making is critical to achieve the completion goals for community colleges. The next generation of leaders at community colleges will make decisions that will have a long-term impact on the entire country and future generations to come.

Data is often available to community college leaders; however, there is an alarming amount of lack of understanding of, and a corresponding lack in the ability to utilize, the data that is collected. It is important to understand which factors correlate with student success; if the wrong data is gathered, this wastes the institution’s time and resources. We live in a society that is outcome-driven; stakeholders want to know that institutions are creating the best environments for students to be successful and be able to see tangible results. The time is now for these leaders to 1) have the systems in place to allow for easy data retrieval and analysis, and 2) ensure that, including themselves, all administrative staff, faculty, and other institutional decision makers are educated enough to create the best practices and processes to provide the best learning environment for student success.

Finally, leadership is defined differently in different contexts. For the purposes of this study, a leader is a person who leads or commands a group, organization, or country.
The Iowa Community College system houses 15 different community college areas. These institutions have different organizational structures and define roles differently. Some have clear and traditional roles of executive leadership, which may include a president, vice-president(s), chief financial officer, provosts, chancellors, and deans. Leaders could further be defined as those that have administrative duties along with a professional staff or faculty role. These may include directors, associate directors, coordinators, or faculty department chair positions at the various campuses.

**Purpose of study**

The purpose of this study is threefold. First, this study was conducted to ascertain the level of data literacy, data-driven decision making, culture, collaboration and advocacy among the leaders at the 15 Iowa community college districts and how these factors guide data-driven decision making influencing student success. Second, the researcher hoped to highlight any differences in the data-driven decision making culture, advocacy, and collaboration of administrators and non-administrators. Third, the study sought to add to the current body of literature on data-driven decision making, specifically as it pertains to the American Association of Community Colleges 21st Century Community College Leadership Competencies and recommendations for community college reform. The goal of the research is to inform policy by providing relevant information on the influence of culture, collaboration, and advocacy towards student success at the community college level.
Research questions

1. What are the demographics and background characteristics among community college leaders (gender, education level, age, and years of experience) who make the decisions towards student success?

2. Is there any inter-relationship among variables that determine community college leaders’ use of data for decision making around student success?

3. Is there a difference in data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy and student success between administrators and non-administrators?

4. Is there a difference between administrators and non-administrators based on their demographic characteristics?

5. To what extent do data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy predict the level of data usage in promoting student success?

Hypotheses

Based on the review of the literature, seven null hypotheses were established regarding the influence of data-driven decision making, culture, advocacy, and collaboration towards student success:

RQ 2: Is there any inter-relationship among variables that determine community college leaders’ use of data for decision making around student success?

H0: There is no inter-relationship among variables that determine community college leaders’ use of data for decision making around student success.
RQ 3: Are there statistically significant differences in data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy between administrators and non-administrators in regards to student success?

$H_0^3$: There is no difference in data-driven decision making, culture, community college advocacy and student success between administrators and non-administrators.

RQ 4: Is there a difference between administrators and non-administrators based on their demographic characteristics?

$H_0^3$: There is no difference in the demographics of administrators and non-administrators.

RQ 5: To what extent do data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy predict the level of data usage in promoting student success?

$H_{0a}^4$: There is no statistically significant relationship between data-driven decision making culture and student success.

$H_{0b}^4$: There is no statistically significant relationship between data-driven decision making institutional student success and student success.

$H_{0c}^4$: There is no statistically significant relationship between collaboration and student success.

$H_{0d}^4$: There is no statistically significant relationship between community college advocacy and student success.
Methodological approach

This study adopted a quantitative research methodology. The Community College Data Literacy (CCDL) survey instrument was used to measure the influence of data-driven decision making combined with culture, collaboration, and community college advocacy on student success. Through an extensive literature review, the goal of this investigation was to conduct a statewide study of community college leaders with a special focus on data-driven decision making from selected community colleges. The investigators wanted to better understand the level of data literacy, data-driven decision making, culture, collaboration, and advocacy in community colleges and how these factors guide data-driven decision making influencing student success with community college leaders. The data analysis procedures included descriptive analysis, exploratory factor analysis, comparative analysis, and linear regression.

Theoretical framework

The methodology of this study was guided by data-driven decision making and what factors influence student success at community colleges. The recent American Association of Community Colleges 21st Century Competencies for Community College Leaders help to identify skills that community leaders needed to have to help the twenty-first century student to be successful. They show the importance of student success for the future of America and how data-driven decision making is key to this success. Tinto’s research is at the forefront of previous literature around student success. The Model for Institutional Action, created by Tinto and Pusser, had synergy with the work of the American Association of Community Colleges.
The Model for Institutional Action (Tinto & Pusser, 2006) was used to develop a theoretical framework for this study. This model holds institutions accountable and deviates from previous student success theories simply focused on student input and student effort (Tinto & Pusser, 2006). The following is a diagram that they established as an example of their model:

![Diagram of Model for Institutional Action](image)

Figure 1. Model for Institutional Action (from Tinto & Pusser, 2006)

This theory model evolved out of the research on student attrition and persistence (Tinto & Pusser, 2006), easily one of the most widely studied topics in higher education over the past 30 years (Tinto & Pusser, 2006). This work has been greatly enriched by the inclusion of research on the experience of underrepresented and low-income students in two- and four-year institutions of higher education (Tinto & Pusser, 2006). Unfortunately, this body of work has not yet resulted in a comprehensive longitudinal
model of student success that effectively translates our knowledge into practices and policies (Tinto & Pusser, 2006). The fact that this work has not resulted in a comprehensive model of student success is due to several issues:

1. The implicit assumption that knowing why students leave is equivalent to knowing why students stay and succeed. The process of persistence is not the mirror image of the process of leaving (Tinto & Pusser, 2006).

2. Research to date focuses on theoretically appealing concepts that do not translate easily into definable courses of action (Tinto & Pusser, 2006).

3. Research on student success focuses on events, often external to the institution, that are not under the immediate ability of institutions to affect (Tinto & Pusser, 2006). This does not provide them with road maps to reasonable policies and practices. Student's lives and experiences prior to enrollment cannot be changed by the institutions.

4. Student persistence, one aspect of student success, is still defined differently depending on the research.

The Model for Institutional Action for Student Success, as shown in the above figure, encompasses several moving parts. The model is multilayered in that it posits that the effect of institutional actions upon student success, such as those by its administrative leadership, is largely indirect; such actions serve to influence the behaviors of faculty and staff, whose actions directly impinge upon student lives either directly, through their own contact with students, or indirectly, through programs that affect students (Tinto & Pusser, 2006). This does not mean that institutional actions cannot directly affect student success;
financial aid policy is a notable example (St. John, Cabrera, Nora, & Asker, 2000), particularly relevant to the issue of the success of low-income students.

**Significance of the study**

This study intended to inform Iowa community college leadership and policy makers with information necessary to increase data-driven decision making within their institution as identified in the recommendations and core competencies of leaders for the twenty-first century community college to improve student success. This is increasingly important as the disparity in income inequality and unemployment with people of color is growing in Iowa. The median income for African Americans in Iowa was $28,883 vs. the state of Iowa median of $53,712 in 2014 (State Data Center of Iowa, 2016). The unemployment rate for Iowa African Americans was 12 percent vs the state of Iowa unemployment rate of 4.4% in 2014 (State Data Center of Iowa, 2016). There are similar disparities for other demographics of people of color in Iowa. Iowa, as well as the rest of the country, is about to face a middle-skills gap. With people of color being the fastest-growing segment of the enrollment population for the state of Iowa, and Iowa community colleges having the highest percentage of students of color enrolled in the nation (Iowa Department of Education, 2015), student success is even more critical for our state community colleges to ensure the state of Iowa remains successful in the future.

This study will also provide further analyses of how data-driven decision making around key factors of the American Associations of Community Colleges 21st-Century Initiative, such as culture, collaboration, and advocacy for community college leaders impacts students success. This investigation will lend to developing a statistical model for
policy makers and community college leaders to understand and help with implementation of policy to accurately track and impact student success.

Summary

This present study sought to ascertain the level of data literacy, data-driven decision making, culture, collaboration and advocacy among leaders at the 15 Iowa community college districts and how these factors guide data-driven decision making influencing student success. The study was grounded in the Model for Institutional Action (Tinto and Pusser, 2006) with guiding factors specifically as they pertain to the American Association of Community Colleges 21st Century Community College Leadership Competencies (AACC, 2012). This research intends to inform policymakers and community college administrators with relevant practices around data-driven decision making via culture, collaboration, and advocacy toward student success at the community college level.

This dissertation is comprised of five chapters. Chapter One provides an introduction and overview of the study as well as an understanding of the theoretical framework and principles that guided the study. It also includes a statement of the problem, purpose of the study, significance of the study, research questions and definition of terms to be used throughout the study. Chapter Two provides a review of the literature, including topics in data-driven decision making, the American Association of Community Colleges 21st-Century Initiative, the American Association of Community Colleges’ Competencies for Community College Leaders, and student success. Chapter Three provides the methodological and research design for the study. It provides the phases of the study, data collection processes, and data analysis methods. Chapter Four
presents the results of the analyses described in Chapter Three. Chapter Five presents the discussion, conclusion, implications, and recommendations for future research, policy, and practice.

**Definition of terms**

Data-Driven Decision Making (DDDM) — refers to administrators, faculty and staff systematically collecting and analyzing various types of data to guide decision making to help improve the success of students and schools (Marsh, Pane, & Hamilton, 2008)

Further, it is the interpretation of the data to inform some type of decision in an educational setting.

Data Analytics — the use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues.

Community College Leader — defined as anyone at the Dean level or above, and could potentially include faculty members with administrative duties attached to their teaching load.
CHAPTER 2. REVIEW OF THE LITERATURE

Introduction

With more than a decade of focus on higher education’s accountability and student success, data-driven decision making has become an important part of every institution’s current agenda and future planning to ensure they improve their overall outcomes and able to prove improved student success. Several organizations and institutions have dedicated themselves to improving student outcomes by 2020 and 2025. The American Association of Community Colleges, in particular, has responded to this sense of urgency and over the past five years put in the work and research to lay out a 21st-Century Initiative for what community colleges should strive to look like in the future. This initiative was centered in student success and utilizing data to ensure community colleges reach the needed outcomes for the future of America.

This study set out to better understand how data-driven decision making impacted student success via the key factors culture, collaboration, and advocacy from the American Association of Community College 21st-Century Initiative Community College Leader Competencies 2nd Edition and recommendations for community college reform. This literature review will cover these specific areas: 1) an examination of data-driven decision making in post-secondary education; 2) an analysis of the research methodology, including the Community College Leader Competencies of the American Association of Community Colleges 21st-Century Initiative; 3) an examination of student success at community colleges and its impact on equity and opportunity for the future of America.
Data-driven decision making in post-secondary education

Beginning with an emphasis to use data for accountability and compliance purposes, a transition has occurred under Secretary of Education Arne Duncan, in which data are to be used to stimulate continuous improvement (Mandinach & Gummer, 2013). The U.S. Department of Education has stressed the use of data and evidence at all levels. With the implementation of data-driven decision making, it is no longer acceptable to rely on experience, gut feelings, or anecdotes (Mandinach & Gummer, 2013). Some educators feel that without data, you are only an opinion (Mandinach & Gummer, 2013).

According to a 2000 report by researchers at the UCLA Center for Research on Evaluation, Standards, and Student Testing (CRESST):

Data-based decision making and use of data for continuous improvement are the operating concepts of the day. These new expectations, that schools monitor their efforts to enable all students to achieve, assume that school leaders and teachers are ready and able to use data to understand where students are academically and why, and to establish improvement plans that are targeted, responsive, and flexible (Mitchell, Lee, & Herman, 2000, p. 22).

The underlying assumption around educational data use is that it will not only inform decision making but it will enhance practice. In other words, the ability to use data effectively or demonstrate data literacy changes teacher practices (Chen, Heritage, & Lee, 2005; Kerr, Marsh, Ikemoto, Darilek, & Barney, 2006); these changed practices then lead to improvements in achievement or student performance (Feldman & Tung, 2001; Schomoker & Wilson, 1995). Few educators are prepared to use data effectively or exhibit data literacy (Mandinach, 2012). Researchers have defined data literacy as
educators’ knowledge and skills that support their effective use of data, working individually and collectively, to collect and examine outcomes, trends, performance, and other indicators, and to develop strategies for school and student improvement based on these data (Mandinach & Gummer, 2013).

Researchers have provided different definitions of data-driven decision making. One viewpoint stated by Rudy and Conrad (2004, p. 2) is “the goal of 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.” According to the *IES Practice Guide*, DDDM is the following: “teachers, principals and administrators systematically collecting and analyzing various types of data, including demographic, administrative, process, perceptual, and achievement data, to guide a range of decisions to improve the success of students and schools (Hamilton, et al., 2009, p. 46).” Ellen Mandinach believes that DDDM is the systematic collection, analysis, examination, and interpretation of data to inform practice and policy in educational settings (2012).

According to RAND research, the analytics process involves seven steps, and can be used in a larger context within education (Ikemoto & Marsh, 2005). Rand Corporation researchers 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). Business managers have been utilizing these business methodologies for a number of years to build the necessary analytical support and develop strategic plans to improve and meet the mission of organizations. That is part of
the problem in this emerging field; educators and researches are still trying to define what it all entails and come to agreement on the future direction of education.

Community college leaders must be intentional and deliberate in building a culture of utilizing data to make informed decisions. They must make sure they hire competent individuals who have the ability to analyze and interpret the data in an effective manner. They must also be able to train the various user groups among community college leaders, from top administrators to coordinators and faculty who also use data to make decisions. One of the key findings in Bischel’s EDUCAUSE study, (2012) was that institutions should focus their investments on expertise, process, and policies before acquiring new tools or collecting additional data. Another one of the key findings in Bischel’s EDUCAUSE study (2012) was that analytical programs are most successful when the various constituents-institutional research (IR), information technology (IT), functional leaders, and executives-work in partnership.

As stated before, the literature shows that data-driven decision making is relatively new to the world of education, particularly post-secondary education. Responding to calls for increased accountability from policymakers, accreditation agencies, and the public, colleges and universities are beginning to use evidence-based practices to improve student success to design, manage, and improve educational programs and services (Jenkins & Kerrigan, 2008). “Building a culture of evidence” to improve student success requires fundamental changes in the way that faculty, administrators, and support services staff use student data in decision making (Jenkins & Kerrigan, 2008). Bischel’s EDUCAUSE study (2012) also showed how important culture is the success of DDDM. The study showed there was a considerable amount of
administrators, faculty and staff who fear or mistrust of institutional data, measurement, analysis, reporting, and change. Some felt that higher education was becoming more like a business and that analytics is the harbinger of that change. In order for the culture change to be successful for data-driven decision making, the respondents felt it had to start at the top. The EDUCAUSE study also showed that respondents felt that it was necessary for different departments to collaborate in order for data-driven decision making to be successful (Bischel, 2012). As state and federal policy encourages community colleges to transform their data use and DDDM practices, there has been unintentional consequence; that is, staff members of IR offices are being drowned by the amount of data with no or very small amounts of additional resources (Starobin & Upah, 2014). They specifically felt that IT and IR staff needed to work together regularly for the entire process to be successful for all users (Bischel, 2012).

**Data-driven decision making in student success**

Since data analytics, data-driven decision making, and the use of data in general are fairly new practices, researchers are still in the early stages of trying to come up with metrics that tie directly to student success. Achieving the Dream, the largest non-government collaborative entity working on this initiative, pulled its state policy teams together in 2005 to develop a standard set of data “indicators” that practitioners and policymakers could use to analyze the performance of community college students (Achieving the Dream, 2012). They call this group the Cross-State Data Work Group (Achieving the Dream, 2012). It originally consisted of researchers out of Connecticut, North Carolina, Texas, Ohio, Florida, and Virginia (Achieving the Dream, 2012). Since their first publication came out in 2006, Oklahoma, Washington, Arkansas, Hawaii, and
Massachusetts have joined the work group (Achieving the Dream, 2012). Together, they have since created an intermediate set of milestones to assist states and institutions in identifying early signs of students who need assistance to stay on track toward completion (Achieving the Dream, 2012).

The Data Quality Campaign, formed in 2005, is another group dedicated to producing data indicators for student success for grades K–20, as well as workforce success. This organization partners with a wide range of organizations across the country. Perhaps the most notable accomplishment of this group was its production of 10 Essential Elements of a Statewide Longitudinal Data System (Starobin & Upah, 2014). Element number 9 is of particular interest, because it ties K–12 data with higher education data (Starobin & Upah, 2014). As of 2011, 49 states had the element number 9 in the work it was doing with their statewide longitudinal data systems designs and work (Data Quality Campaign, 2014b)

**Theoretical framework**

**Model for institutional action**

Despite the extensive research on retention and student success, translating that knowledge to actionable approaches on college campuses continues to be a significant challenge (Tinto & Pusser, 2006), and improved student success does not come about by chance (Carey, 2005). Rather, student success—for all types of students—is the result of intentional institutional actions and practices that are consistently applied over the long term (Ward, Siegel, & Davenport, 2012). The primary factors in the student success equation are student motivation to engage and learn, and institutional actions that articulate clearly to students the value and expectation of engagement and learning (Ward et al., 2012). Institutions may be limited in their ability to influence student motivation,
but their capacity is limitless to construct systems designed to identify at-risk students, identify best practices programs on campus, create intentional pathways that enhance students’ probability of success, and measure student learning (Ward et al., 2012).

Post-secondary education missions and goals are shaped by educational policies at local, state, and federal policy that impacts the different campuses and student success. Institutions operate within state and federal policies and practices, which impacts the actions they can take to support student success (Tinto & Pusser, 2006). Although the federal government delegates the responsibility of regulating and financing post-secondary education to states (Gladieux et al., 2005), key federal policies have impacted access to higher education largely through financial aid, whereas state policies have addressed issues of affirmative action, in-state tuition for undocumented students, merit aid, and the structure of public higher education systems including their transfer functions (Hurtado et al., 2012).

The drive for greater post-secondary institutional accountability has become more prominent after the passage of the No Child Left Behind (Tinto & Pusser, 2006), and student learning outcomes are at the center of most accountability efforts (Hearn & Holdsworth, 2002). Scholars have examined how the broader policy context exerts pressure on institutions to act in specific ways, which in turn impact student experiences in college and post-secondary educational outcomes (Hurtado et al., 2012). The study of policy development as it relates to student success is relatively new (Tinto & Pusser, 2006), however, in the current context of increased accountability, it is important to understand how federal and state policies directly and indirectly influence post-secondary outcomes (Hurtado et al., 2012). The influence of state-level policies on higher education
is more direct than federal policies, particularly in the financing of colleges and universities (Tinto & Pusser, 2006).

**American Association of Community College community leadership competencies**

The American Association of Community Colleges (AACC) is a national organization representing the nation’s 1,197 community, junior, and technical colleges and their more than 13 million students. Community colleges are higher education’s largest and fastest-growing sector, currently enrolling close to half of all U.S. undergraduates (AACC VFA, 2012). This section addresses the AACC’s core competencies for future leaders of community colleges.

The AACC defines *organizational strategy* as effective leadership to promote the success of all students, improve the quality of the institution, and sustain the community college mission based on knowledge of the organization, its environment, and future trends (*AACC Competencies for Community College Leaders*, 2013). This competency supports the importance of data-driven decision making by stating the need to adopt changing technologies that impact student success.

The AACC defines *institutional, research, fundraising, and resource management* as the equitable, ethical, and sustainable leadership of people, processes, and information, as well as physical and financial assets, to fulfill the mission, vision, and goals of the community college (*AACC Competencies for Community College Leaders*, 2013). Within this competency, it’s stated that community college leadership is expected to understand all institutional reporting systems and integrated use of these systems, in order to ensure successful academic experiences for students. Leaders must support a culture of data-driven decision making with the institutional resources at hand.
The AACC defines collaboration as the development and maintenance of responsive, cooperative, mutually beneficial, and ethical internal and external relationships that nurture diversity, promote the success of all students, and sustain the community college mission (AACC Competencies for Community College Leaders, 2013). The literature supports collaborative inquiry with regards to data literacy and its relevance in professional learning communities and data teams (Mandinach & Gummer, 2013). Group decision making has been identified as an important part of the continuous improvement process (Huffman & Kalnin, 2003). Chen et al. (2005) have noted that using data promotes collaboration and shared planning. Collaboration helps teachers to identify student needs (Wayman & Stringfield, 2006) and by working together, teachers jointly generate questions, analyze, and present results, and determine appropriate instructional actions (Mandinach and Gummer, 2013). Spillane and Louis (2002) have found that collaboration leads to school improvement processes, professional learning, and improving instructional capacity. Means and colleagues (2010) examined individual teacher data literacy, as well as group data literacy, and found that groups could compensate for individuals’ lack of knowledge and skills. They found that groups were more adept at seeking clarifications, identifying errors in information and computations, considering alternative explanations, following up on questions, and using background information. Groups also exhibited more correct responses than did individual teachers as well as more engagement in working with data (Means et al., 2010). In general, groups use a wider array of skills to inform decisions than did individuals (Mandinach & Gummer, 2013). Starobin and Upah (2014) state the second key element in statewide success is stakeholders.
It has become clear that building larger and sophisticated state data systems is not enough to transform state and local education systems. [...] To leverage current investments for effective data use, states must act to ensure the data can be linked across different education systems, and that the data are accessible to stakeholders. [...] Stakeholders could include parents, students, teachers, school administrators, taxpayers, business leaders, philanthropists, and state policymakers (Starobin and Upah, 2014 p. 161).

The AACC defines community college advocacy as understanding of, commitment to, and advocacy for the mission, vision, and goals of the community college on the local, state, and national level (AACC Competencies for Community College Leaders, 2013). The community college leader must be aware of government programs that may impact student programming and successes and how to effectively advocate for the institution’s best interests. The literature speaks to why definitions matter and the impact it is going to have on data literacy and education policy change. Orland spoke to a paraphrase of a famous observation from Daniel Patrick Moynihan (cited by Weisman, 2010, p.1). It states, “There are two fundamental truths regarding the role policy can play in having educators rely more on data to guide their decisions.” The first is that this goal will only be realized when the culture in our educational institutions truly changes to embrace this concept. The second is that the right policies can catalyze these necessary cultural changes in classrooms, schools, and administrative offices. The U.S. Department of Education has spent over 600 million dollars in grants to state education agencies (SEAs) in recent years to upgrade their data systems so that decision makers can have higher quality data, such as longitudinal student records linked to individual teachers as well to
pre- and post-K–12 school experiences (NCES, 2013). This emphasis has also been manifest in the criteria for state Race to the Top awards (U.S. Department of Education, 2010). The federal government has supported the creation of next-generation assessment systems, which include formative assessment data linked to new standards as a centerpiece of the new models from the two federally supported assessment development consortia (Tamayo, 2010). However, even the most ardent supporters of these policies are not likely to argue that they are sufficient in and of themselves to change the culture of educational decision making (Orland, 2013).

Similar to the need to more precisely define the concept of data literacy, the education policy landscape is littered with vague, multiple, and conflicting definitions of related policy concepts and objectives (Orland, 2013). As one prominent example of policy definition amorphousness, “accountability” has been defined and operationalized in multiple ways by education policymakers and advocates (Orland, 2013). To some it means holding teachers and administrators responsible for the educational outcomes of their students as measured chiefly by standardized test scores (Greenberg & Walsh, 2012). To others it means holding educational systems to a clearly defined standard for providing the resources and supports needed for students to succeed at school as measured by both test scores and other indicators of student well-being (Broader Bolder Approach to Education, 2009). To others it means maximizing the responsiveness of the educational system to the desires of its parents as reflected in their freedom to choose the educational experiences their children will receive (Orland, 2013). As the variance in these examples might suggest, there is a resulting lack of standardization when
proponents of each of these policies use the term “accountability” for their advocacy, with different intended outcomes in mind (Orland, 2013).

Having vague, multiple, and conflicting definitions of an important educational objective becomes more problematic when it directs a set of specific policy actions governed by legislation, regulations, and/or implementation activities, designed to change the behaviors of educational decision makers and alter the culture of our educational institutions (Orland, 2013). In the policymaking process, it is essential to clarify critical definitions and constructs, so that resulting policy enactments can be clearly seen as representing a reasonable theory of action to achieve the intended objectives (Orland, 2013). Otherwise, precisely because of the broad rhetorical appeal of the concept, policies can very easily become detached and distorted from the original goals of its advocates (Orland, 2013). This in turn can lead to, at best, symbolic policymaking that is devoid of substantive content or, at worst, policies which—rhetoric notwithstanding—may actually increase the difficulty of achieving original policy goals (Orland, 2013).

Starobin and Upah (2014) state:

The most important of their [Data Quality Campaign] four elements for success with state longitudinal data systems might be connecting policy with data. Building the State longitudinal data systems begins with an effective dissemination of the goals and objectives. The long term objectives as the sum of the short-term objectives include creating the ability and capacity to inform policy and practical questions that ensure alignment and continuous improvement across the human capital development within each state. […] Policymakers and data
managers need to develop a strong partnership in building, continuing to maintain and ensuring access to state longitudinal data systems (p.162).

It is critical that data-driven decision making, data literacy, and data analytics are clearly defined for the policymaking process.

**American Association 21st-Century Initiative**

The AACC released *Reclaiming the American Dream: Community Colleges and the Nation’s Future, A report from the 21st Century Commission on the Future of Community Colleges* in 2012 during Phase 3 of the 21st-Century Initiative (AACC, 2012). In 2014, they moved the ideas to actions with the release of the implementation guide *Empowering community colleges to build the nation’s future* during the final fourth phase of the 21st-Century Initiative (AACC, 2014).

The implementation guide provides a blueprint for colleges and others to implement the seven recommendations infused in the Three Rs (AACC, 2014):

- Redesign students’ educational experiences
- Reinvent institutional roles
- Reset the system so it better promotes student success

The guide outlines specific actions colleges can take—must take—to address the challenges and improve completion rates (AACC, 2014). The guide is written primarily for community college administrators, faculty, staff, and governing board members, with student success top of mind (AACC, 2014). It requires a collaborative effort of other individuals and organizations in the policy, education, and business communities in designing, implementing, and supporting many of the recommended actions (AACC, 2014).
The typical approaches to educating community college students are not working well enough (AACC, 2014). Everyone concerned with improving outcomes must reconsider community college roles, structures, and approaches (AACC, 2014). Colleges must rethink and reshape every aspect of their work-policy framework, programs of study, student support, and relationships with those around them, with one goal in mind: giving community college students the tools, motivation, and support to finish what they start (AACC, 2014).

For this current research we are focusing on four of the seven recommendations to help guide us in our investigation. They are the following:

- **Redesign Students’ Educational Experiences Recommendation One**: Increase completion of students earning community college credentials (certificates and associate degrees) by 50 percent by 2020, while preserving access, enhancing quality, and eradicating attainment gaps associated with income, race, ethnicity, and gender.

- **Redesign Students’ Educational Experiences Recommendation Three**: Close the American skills gap by sharply focusing career and technical education on preparing students with the knowledge and skills required for existing and future jobs in regional and global economies.

- **Reinvent Institutional Roles Recommendation Five**: Invest in support structures to serve multiple community colleges through collaboration among institutions and with partners in philanthropy, government, and the private sector.

- **Reset the System Recommendation Seven**: Implement policies and practices that promote rigor, transparency, and accountability for results in community colleges.
The implementation guide provides specific implementation strategies for each of the recommendations. The guide outlines six implementation strategies for the Redesign Students’ Educational Experiences Recommendation One, in order to increase the completion rates of students earning community college credentials by 50 percent by 2020. They are as follows:

- Publicly commit to explicit goals for college completion
- Create pathways
- Expand prior-learning assessments
- Devise completion strategies on both ends of the college experience
- Establish guarantees for seamless transfer
- Implement automatic graduation and reverse transfer programs

The implementation guide advises four actions for the Redesign Students’ Educational Experiences Recommendation Three, in order to close the American skills gap by sharply focusing career and technical education on preparing students with the knowledge and skills required for existing and future jobs in regional and global economies. They are the following:

- Better understand labor market trends and employers’ needs and communicate them to students
- Develop career pathways to current and future jobs
- Redesign student experiences to incorporate more work-based, hands-on, and technology-enriched learning
- Engage actively with partners to match education and training with jobs

The implementation guide outlines three actions for the Reinvent Institutional Roles
Recommendation Five, for colleges to invest in cross-college support structures through collaboration among institutions and with partners in philanthropy, government, and the private sector. They are the following:

- Develop models for collaborative support structures and brokered/coordinated services
- Create statewide and border-crossing data systems
- Create consortia to optimize the capacities of collaborating institutions

The implementation guide advises two actions for the Reset the System Recommendation Seven, for colleges to implement policies and practices that promote rigor, transparency, and accountability for results in community colleges. They are the following:

- Implement the Voluntary Framework of Accountability (VFA)
- Develop and use common indicators of student success

The guide also recommends that to build and strengthen college-level work, the following actions should happen at the national level:

- Develop the VFAs workforce metrics to incorporate labor and wage data that reflect outcomes of community college education
- Continue work to strengthen ways of reporting student learning outcomes as part of the VFA
- Encourage colleges nationwide to adopt the VFA, and promote statewide participation
- Position the VFA as the standard for measuring community college performance
• Support colleges so they can use the VFA effectively

• Establish an annual evaluation of the VFA’s effectiveness

The American Association of Community Colleges (AACC) is leading the VFA in collaboration with two partner organizations (AACC VFA, 2012). The first organization is the Association of Community College Trustees. Founded in 1972, the Association of Community College Trustees (ACCT) is the nonprofit educational organization of governing boards, representing more than 6,500 elected and appointed trustees of community, technical, and junior colleges in the United States and beyond. ACCT’s purpose is to strengthen the capacity of community, technical, and junior colleges and to foster the realization of their missions through effective board leadership at local, state, and national levels (AACC VFA, 2012).

The second partner organization for the VFA is the College Board Advocacy and Policy Center. The College Board Advocacy and Policy Center was established to help transform education in the United States. Guided by the College Board’s principles of excellence and equity in education, the center works to ensure that students from all backgrounds have the opportunity to succeed in college and beyond. Critical connections between policy, research, and real-world practice are made to develop innovative solutions to the most pressing challenges in education today. Drawing from the experience of the College Board’s active membership consisting of education professionals from more than 5,900 institutions, priorities include college preparation and access, college affordability and financial aid, and college admission and completion (AACC VFA, 2012). The funding for the development and operation of the voluntary framework is the Bill & Melinda Gates Foundation and the Lumina Foundation (AACC VFA, 2012).
Foundation, “guided by the belief that every life has equal value”, works to help all people lead healthy, productive lives (AACC VFA, 2012). In developing countries, it focuses on improving people’s health and giving them the chance to lift themselves out of hunger and extreme poverty (AACC VFA, 2012). In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Based in Seattle, Washington, the foundation is led by CEO Jeff Raikes and Co-chair William H. Gates Sr., under the direction of Bill and Melinda Gates and Warren Buffett (AACC VFA, 2012).

Lumina Foundation, an Indianapolis-based private foundation, is committed to enrolling and graduating more students from college—especially twenty-first century students: low-income students, students of color, first-generation students, and adult learners. Lumina’s goal is to increase the percentage of Americans who hold high-quality degrees and credentials to 60 percent by 2025. Lumina pursues this goal in three ways: by identifying and supporting effective practice, through public policy advocacy, and by using its communications and convening power to build public will for change (AACC VFA, 2012).

These recommendations are important for community colleges to incorporate to remain relevant in the twenty-first century. These selected recommendations help to guide our investigation as we look at the Model for Institutional Action and develop the factors for the statistical model for our study of data-driven decision making and how it impacts the factors extracted from these recommendations to improve student success.

The current research framework uses four of the five AACC Community College Leadership Competencies (organizational strategies; institutional, finance, research,
fundraising, and resource management; collaboration; and community college advocacy) to help formulate the framework from the Model for Institutional Action to analyze the use of data-driven decision making for student success by community college leaders.

**Student success at community colleges**

Improving student success at community colleges is a nationwide priority. President Obama, during his administration, has highlighted and elevated community colleges for the first time as one of the main resources to getting America back on track. He held the first White House Summit on Community Colleges in 2010 to focus on how these institutions play a key role in improving our number of graduates, and preparing these graduates to be our leaders in the twenty-first century workforce (White House, 2016). Findings shared at the summit in 2010 revealed that fewer than three in 10 full-time students pursuing two-year degrees met that goal within three years; part-time student completion rates were even lower. Less than half of the community college students intending to earn a degree or to transfer reached their goal within six years of first enrolling (White House, 2016). The President has directed record amounts of funds towards community colleges during his administration in support of a goal for the U. S. to lead the world in numbers of post-secondary graduates by 2020 (White House, 2016). His initiative, America’s College Promise, has laid out the goal of making the first two years of community college free (White House, 2016).

In a group panel with the President of the AACC, Walter Bumpus, he stated, “Community colleges can be proud of their efforts to provide access to all but need to rethink how they are helping students to complete (W. Bumpus, personal communication, September 28, 2015).” Once unchallenged, this nation’s primacy in college graduation
rates has already been taken overtaken by committed competitors from abroad (AACC, 2012). As stated before, America now ranks 16th in the world in completion rates for 25 to 34 year olds (AACC, 2012). If this nation can add 20 million post-secondary-educated workers to its workforce over the next 15 years, income inequality will decline substantially, reversing the decline of the middle class (AACC, 2012). Median income in the United States stagnated between 1972 and 2000 (AACC, 2012). Since 2000, median family income has declined by seven percent (AACC, 2012). A child born poor in the United States today is more likely to remain poor than at any time in our history (AACC, 2012). In late 2011, the Associated Press reported on census data, revealing that nearly half of all Americans either have fallen into poverty or have earnings that classify them as low-income (AACC, 2012). Not coincidentally, education completion has shifted in the United States, so that for the first time younger generations will be less educated than their elders (AACC, 2012).

For the first time in many decades, under the Obama Administration, a United States president called attention to the role of community colleges in creating an educated workforce through their many pathways to post-secondary education: certificates, continuing education, associates degrees, and transfer to four-year universities (Lester, 2014). This is important since at the same time, the largest demographic of community colleges, people of color, are projected to increase in number (U.S. Census Bureau, Population Division, 2008). Efforts to achieve the goals of the Obama Administration have largely focused on community colleges, as these two-year institutions are seen as having the greatest potential for positive change, particularly among those students who have “some college” (Lester, 2014). Only 20 percent of full-time community college
students receive an associate’s’ degree within three years (National Center for Higher Education Management Systems & Jobs for the Future, 2007). The United States will fall 16 million degrees short of the number necessary to match leading nations and to meet the workforce needs of 2025 at the current rate of completion (National Center for Higher Education Management Systems & Jobs for the Future, 2007).

As President Obama has raised the level of awareness around the need for student success at community colleges, others have joined him in this journey. During the past several years, business leaders, philanthropic organizations, researchers and policymakers have converged around the idea that more Americans need to enroll and succeed in college by earning a post-secondary credential by 2025 (Price & Tovar, 2014). Philanthropic organizations, such as the Bill and Melinda Gates Foundation and Lumina Foundation, took up the challenge to promote change in community colleges to reach completion goals through initiatives such at the Completion by Design and Achieving the Dream (Lester, 2014). The Lumina Foundation is calling for the United States to increase higher education attainment rates so that 60 percent of adults 25–64 years of age have a college credential by 2025 (Price & Tovar, 2014). The Bill and Melinda Gates Foundation wants to double the numbers of low-income youth, 16–26 years of age, who obtain a college credential (Price & Tovar, 2014).

**Equity in student success**

Data-driven decision making has the opportunity to impact student success for the largest demographic of students enrolled in post-secondary institutions, i.e., those attending community colleges. Future community college leaders need to utilize data analytics and make data-driven decisions to help improve student’s success at their
respective institutions. Community colleges now enroll close to half of the undergraduates in the country (College Board, 2012). Between 2008 and 2011, enrollment numbers for full-time students taking courses for community college credit reached more than eight million (College Board, 2012). Including part-time students, this number totaled nearly 12 million students enrolled in America’s community colleges, equaling 44 percent of all undergraduates (NCES, 2010). Two-thirds of community college students attend part-time (NCES, 2010). Minorities comprise forty-five percent of community college students (NCES, 2010). The average age of community college students is 28; more than half are already employed (NCES, 2010). There needs to be a common approach to interpreting relevant student data, so that institutions and policymakers can understand the extent of specific problems, measure the impact of potential solutions, and decide where to act (Achieving the Dream, 2012).

Access and completions for people of color at community colleges is critical for all of the projections and goals for completions of the various organizations discussed previously in this literature review. The National Center for Educational Statistics showed minorities comprised 45 percent of community colleges in 2010; this number was roughly the same in 2012 at about 42 percent (NCES, 2010, 2012). African Americans, Native Americans, and Hispanic students represent over 34 percent of the student population at community colleges compared to 24 percent at four-year universities (NCES, 2012). Students from historically underrepresented groups tend to enroll in community colleges due to their accessibility, lower cost, and access to developmental education (Lester, 2014). This also includes low income and first-generation college students, who are primarily African American and Hispanic (Price & Tovar, 2014).
Despite the ability to access community colleges, Black and Hispanic students are at greater risk than Caucasian students for not completing the degree or transfer, a primary reason for a focus on completion over access (Lester, 2014).

Additionally, community college students are often underprepared for college-level course-work as evidenced by their reading, writing, and mathematic skills (Price & Tovar, 2014). There have been recent studies conducted that have been able to put statistics to this fact. A study by Snyder & Dillow (2011) analyzing NCES data found that just over 40 percent of students in the 2007–2008 National Postsecondary Student Aid Study reported taking a remedial course while at these institutions. The Achieving the Dream initiative conducted a study of participant institutions and found that 59 percent of students enrolled in at least one development course (Bailey, Jeong, & Cho, 2010). When these demographics and statistics are taken into account, community college students are at risk of not completing and dropping out before completing a certificate or degree. The Digest of Education Statistics reported that one in five of 2005 first-time, full-time degree seeking students attending public community colleges obtained an associate degree or certificate within 150 percent of the expected normal time, or three years (Synder & Dillow, 2011). The percentages by race/ethnicity are: 23 percent for Whites, 18 percent for American Indian/Alaskan Natives, 16 percent for Hispanics, and 12 percent for Blacks (Price & Tovar, 2014). Thus, meeting the credential attainment challenge is especially critical for community colleges, whose students traditionally experience a variety of barriers to degree attainment (Cohen & Brawer, 2008; Kim, Sax, Lee & Hagedorn, 2010; Price & Tovar, 2014). A student attending a community college faces a variety of barriers and could easily be one simple flat tire
away from not completing at a community college. It is critical we provide the support and intentionality to help students with the tools they need to be successful.

**Equity in Iowa community college student success**

In response to the national trends and completion goals set by others around the country, 15 Iowa community college districts agreed to establish the Iowa Community College Completion Initiative in 2012 (Iowa Association of Community College Trustees [IACCT], 2012). The goal of the Iowa Community College Completion Initiative is to increase the number of higher education credentials earned by Iowa community college students (IACCT, 2012). Iowa community colleges plan to meet this goal through a series of 11 commitments including initiatives such as: including adapting and improving college policies and procedures to improve students’ opportunities to complete higher education credentials, making certificate and degree completion the top priority at the community college, ensuring the completion initiatives are incorporated into the strategic planning processes; and learning from colleges both within the state of Iowa and across the nation to develop best practices to improve the attainment of higher education credentials (IAACT, 2012).

The Georgetown Center of Education and the Workforce projects that Iowa will add 612,000 jobs between 2010 and 2025 and by that time, 68 percent of all jobs in Iowa will require some form of post-secondary education (Des Moines Register, 2015). According to the National Skills Coalition, just 50 percent of Iowans today have the degrees and credentials necessary to obtain middle skill jobs, even as 57 percent of our local jobs will require them (Des Moines Register, 2015).
More than 35,000 Iowans ages 16 to 24 are currently out of school and not working (Des Moines Register, 2015; Opportunity Nation, 2015).

The importance of Iowa’s 15 community college districts falling into alignment with the current attention being paid to student success at community colleges is very important considering the current trends and projections for the population of the State of Iowa. By 2025, the Latino population in Iowa is projected to increase by 23 percent and the African American population in Iowa is projected to increase by 11 percent (State Library of Iowa, 2016). Even though the overall minority population makes up roughly 12 percent of the total population, these projections are significant when compared to the projected growth for Caucasians in Iowa by 2025, which is roughly one percent (State of Library of Iowa, 2016). The enrollment of minorities over the past five years at Iowa community colleges has an annual growth rate of 4.1 percent (Annual Conditions of Iowa Community Colleges, 2015). In 2007, 12 percent of students enrolled in Iowa community colleges were racial or ethnic minorities. By 2015, there was a record high of 18.9 percent enrollment of racial or ethnic minorities (Annual Conditions of Iowa Community Colleges, 2015). There has only been one year of decline (16.8 percent) in 2012, when all enrollment was down for the state (Annual Conditions of Iowa Community Colleges, 2015). Even though Iowa overall has a small minority population, it has led the nation in community college penetration rate of minority students for the past six years at 3.4 percent of states where the non-white population is the minority (Annual Conditions of Iowa Community Colleges, 2015).

Completions in the state are trending upward for most minority population groups. White students’ rates of completions for the state were higher than their enrollment rates,
these students made up 81 percent enrollment of the state community colleges students, but 86 percent completion rates (Annual Conditions of Iowa Community Colleges, 2015). African Americans, who make up 38.2 percent of minority enrollment in the state, are trending downwards with only a 35.4 percent of completions (Annual Conditions of Iowa Community Colleges, 2015). Hispanics are slightly higher at 37.9 percent of awardees, but they make up only 33.9 percent of all minority enrollees.

Frank Harris III, (2014), presented similar trends when examining one of the Iowa community colleges; his results are found in Table 2.1. His findings are in alignment with what the state is reporting. He was able to look at all males enrolled at this Iowa community college. White males enrolled in the Iowa community college made up 74 percent of enrollment and 81 percent completions for awards. Black males had 9 percent enrollment and 4 percent completions for awards. Hispanic males had 4 percent enrollment and 2 percent completions for awards. Asian males were the only minority group with a completion rate similar to white males, with 2 percent enrollment and 3 percent completions for awards. The research shows that Iowa community colleges are in the same situation as others in the country, and need to improve the completions of the minority students enrolling in the 15 Iowa community college districts.

Table 2.1 Degrees/Certificates Awarded to Men 2010–2012

<table>
<thead>
<tr>
<th></th>
<th>% of Men Enrolled</th>
<th>% of Degrees/Certs</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Resident</td>
<td>1%</td>
<td>2%</td>
<td>-1%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>4%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Asian</td>
<td>2%</td>
<td>3%</td>
<td>-1%</td>
</tr>
<tr>
<td>Black</td>
<td>9%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Hawaiian/ Pacific Islander</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>White</td>
<td>74%</td>
<td>81%</td>
<td>-7%</td>
</tr>
<tr>
<td>Multiracial</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>7%</td>
<td>6%</td>
<td>1%</td>
</tr>
</tbody>
</table>

The fact the minority unemployment rates do not reflect the state rate of 4.4% should cause concern for state leaders in Iowa. If your fastest growing demographic has current unemployment rates 3 to 4 times higher than the state rate and failing in your state K-12 systems, Iowa could be in trouble for the future to come. The intentional focus of improving the student success of people of color in Iowa is a something that needs to be a priority for the state.
CHAPTER 3. METHODOLOGY

Introduction

The purpose of this study was to ascertain the level of data literacy, data-driven decision making, culture, collaboration and advocacy among the leaders at the 15 Iowa community college districts and how these factors guide data-driven decision making influencing student success. Using the 2012 and 2015 EDUCAUSE Analytics Survey, the Learning Analytics Readiness Instrument (LARI), and the President’s Survey Tool, the constructs of the research for this newly developed instrument are vetted in the 2nd Edition of the American Association of Community Colleges Competencies for Community College Leaders. These constructs include organizational strategy, institutional finance, research, fundraising, and resource management, communication, collaboration, and community college advocacy. As the researcher, I will use these constructs as a guide to examine data analytics and data driven decision making at the community college level. Specifically, I will take a look at how data usage is affected by leadership and how it affects student outcomes.

This study utilized a quantitative methodology to analyze data collected through the Community College Data Literacy (CCDL) survey. This survey was developed to better understand data-driven decision making for community college leaders. Descriptive statistics were used to examine the background characteristics of the community college leaders. Independent samples t-test were conducted to identify differences between administrators’ and non-administrators’ data-driven decision making. Multiple regression analyses were administrated to investigate the factors that influence student success. The purpose of this chapter is to summarize the methodological approach that was used in the study including research questions,
hypothesis, research design, conceptual model, population, instrumentation, data collection, study variables, methods of data analysis, ethical issues, limitations, and delimitations of the study.

**Research questions**

The following research questions guided this study:

1. What are the demographics and background characteristics among community college leaders (gender, education level, age, and years of experience) who make the decisions towards student success?

2. Is there any inter-relationship among variables that determine community college leaders’ use of data for decision making around student success?

3. Are there statistically significant differences in data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy between administrators and non-administrators in regards to student success?

4. Is there a difference between administrators and non-administrators based on their demographic characteristics?

5. To what extent do data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy predict the level of data usage in promoting student success?

**Hypotheses**

Based on the review of the literature, hypotheses were developed for each of the research questions and was stated in the null form. Because research question one
referred to descriptive analysis, only research questions two through four warranted hypothesis testing.

**RQ 2:** *Is there any inter-relationship among variables that determine community college leaders’ use of data for decision making around student success?*

**H₀¹:** There is no inter-relationship among variables that determine community college leaders’ use of data for decision making around student success.

**RQ 3:** *Are there statistically significant differences in data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy between administrators and non-administrators in regards to student success?*

**H₀²:** There is no difference in data-driven decision making, culture, community college advocacy and student success between administrators and non-administrators.

**RQ 4:** *Is there a difference between administrators and non-administrators based on their demographic characteristics?*

**H₀³:** There is no difference in the demographics of administrators and non-administrators.

**RQ 5:** *To what extent do data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy predict the level of data usage in promoting student success?*

**H₀⁴ᵃ:** There is no statistically significant relationship between data-driven decision making culture and student success.

**H₀⁴ᵇ:** There is no statistically significant relationship between data-driven decision making institutional student success and student success.
H₀⁴c: There is no statistically significant relationship between collaboration and student success.

H₀⁴d: There is no statistically significant relationship between community college advocacy and student success.

**Research design**

This research study was designed to be conducted in three phases:

- **Phase 1:** Conducted review of different research surveys that were administered nationally with a focus on data analytics to determine constructs and questions to include in the CCDLS survey instrument
- **Phase 2:** Administered pilot survey to three selected Iowa community colleges
- **Phase 3:** Testing for reliability and validity and revising of the CCDL survey instrument

**Phase 1: Initial survey design**

A research team formed under the leadership of the Office of Community College Research & Practice reviewed and analyzed well known survey instruments, including the Community College Presidency: Demographics and Leadership Preparation Factors Survey, the Beta version of the Learning Analytics Readiness Instrument (LARI), and the different versions of the EDUCAUSE Analytics survey from 2012–2015. A listing of possible survey questions was established and then reviewed by the research team. All rights to use these questions, in full or in part, were obtained from the various sources.

The initial CCDL survey instrument (Appendix A) included 43 items that specifically examined variables associated with data-driven decision making, leadership,
collaboration, general leadership demographics, advocacy and student success. Once the
survey instrument was finalized, permission for the Fall 2015 pilot study was sought and
granted by the Iowa State University Institutional Review board on September 28th, 2015.
The letter of approval and the complete IRB document can be found under Appendices.

**Phase 2: Fall 2015 pilot study**

During the fall 2015 semester, a pilot study of the CCDL survey instrument was
conducted at three Iowa community colleges. Over a three-week period, nearly 200
leaders at the three community colleges were invited to participate in the pilot study. The
definition of community college leaders for this research may be defined as anyone at the
coordinator level or above, including any faculty members with administrative duties
attached to their teaching load. Participants were sent an invitation email including a link
to participate in the survey using the Qualtrics online survey software. The goal was to
obtain a minimum of 100 responses to the emailed survey; this goal was met, qualifying
the responses as a valid and reliable sample. Of the 198 participants we invited to
participate, we had 107 complete responses to the survey, representing a completion rate
of 54 percent.

Phase 2 was completed at three Iowa community colleges: Des Moines Area
Community College, Indian Hills Community College, and Eastern Iowa Community
College. As the researcher, I had ties to these institutions which allowed for feasible
communication with those who completed the survey.

For research question 1 and research question 2, descriptive analyses were
performed for DMACC leaders’ responses against the other two selected community
colleges leaders’ responses. Some of the highlight results of the survey for questions 1
and 2 highlighted were that nearly 40 percent (38.6 percent) of the community college leaders at the three pilot colleges were between the ages of 50–59; 95 percent of the community leaders were identified as white; and nearly 40 percent (39.7 percent) of the leaders responded they had a master’s degree. For research question 3 and research question 4, the aggregate data of all three selected Iowa community colleges leaders’ responses were used, due to the small sample sizes presented individually from DMACC leaders’ responses.

Exploratory factor analyses were conducted for research question 3 and four constructs with eigenvalue greater than 1 were discovered. The Pearson correlation conducted for research question 4 found that data-driven decision making culture construct had some relationship with the student success construct.

Analysis of the pilot study revealed several areas of concern, particularly with the length of the survey and the duplication in some of the questions. Even though the response rate was above 50 percent, this could potentially have been much lower if the survey was distributed to colleges for which I did not have connections to the community colleges leaders. The length of the survey seemed to impact the number of administrators who completed the survey. Initially, 131 community college leaders started responses to the survey, but 31 did not submit a completed response. This resulted in a 12 percent loss of complete responders to the pilot survey. As a result, the questions were re-examined to eliminate unnecessary questions to the survey. The survey was modified based on the results of the pilot study, and an exploratory factor analysis (EFA) was conducted to help reduce additional questions. The final survey design was reduced from 43 questions to 29
questions. Duplication of questions was reduced throughout the survey, improving the ability to collect relevant information for the investigation.

**Phase 3: Testing for validity and reliability**

The terms validity and reliability help ease researchers’ minds when they review investigations and studies of their peers. *Reliability* is when measurement is consistent and means that the survey instrument and the results are the same for the first and second tests (Creswell, 2009). It is important to assess the reliability of data prior to conducting inferential statistics to help answer research questions (Morgan et al., 2013). *Reliability* refers to the consistency and stability of the scores obtained through measurements (Creswell, 2012). The reliability of the CCDL survey was ensured as a result of the pilot study in which the results of the exploratory factor analysis supplied evidence of reliability. As previously stated, a process of survey development process was conducted in Phase 1, reviewing the President’s survey, the Learning Analytic Readiness Instrument (LARI), and EDUCAUSE 2012 and 2015 surveys.

Validity is focused on outcomes, and whether or not results match the conditions of the research method (Creswell, 2009). With regards to quantitative studies, it is the extent to which interpretation of scores measures up to its proposed use. It is concluded in three traditional forms of validity: a) content validity (if the items measure what they intended to measure), b) predictive validity (if results correlate with other results), and c) construct validity (if items measure hypothetical concepts) (Creswell, 2012). Validity is usually observed through factor analysis and homogeneity tests. The CCDL survey instrument was created from research that has been published in peer-reviewed journals.
The surveys that were utilized to create the CCDL have been deemed valid through previous quantitative research.

**Survey instrument**

The final version of the CCDL Survey (Appendix B) was developed after reviewing commonly used and established national surveys, conducting a pilot study, and reviewing the pilot study data for reliability and validity. The instrument focuses on four key sections: demographics, data-driven decision-making, organizational/institutional structure, and the AACC leadership competencies.

The demographics section gathers basic demographic data about community college leaders, including: administration, non-administration, age, gender, race, and education level. The demographics section also includes questions about years in position and field of study for highest degree earned. The demographic questions are structured for mainly categorical responses.

The data-driven decision making section includes questions related to community leaders’ perceived level of personal involvement in data-driven decision making, as well as questions to understand the roles of community college administrators and non-administrators in the data collection, analysis, and decision making with the data. Responses to a majority of the questions are on a Likert-type scale.

The organizational/institutional structure section includes questions around the community colleges’ governance, infrastructure, and data collection set-up. This section also asks question around student success, culture, leadership vision, and understanding of college. Responses to a majority of the questions are on a Likert-type scale.
The final section of the survey is based on the five *AACC’s Competencies for Community Colleges Leaders* (2012). Questions are structured to ask community leaders about their preparation with and the importance of items related to: organizational strategy, institutional finance, research, fundraising and resources management, communication, collaboration, and community college advocacy. Responses to a majority of the questions are on a Likert-type scale.

**Setting**

The CCDL survey was administered to community college leaders in all 15 of the Iowa community college districts during the Summer 2016 academic semester and closed in the Fall 2016 academic semester. The state of Iowa is split up into 16 community college districts but only has 15 community colleges serving them. Each district serves between three and 11 counties, with the average region comprising all or most of six counties (Iowa Department of Education, 2011). Iowa community colleges differ in size and enrollment numbers. The majority of community colleges in Iowa have a main campus and then smaller alternate campuses or county service centers, but only two districts, Iowa Valley CC District and Iowa Western CC, are considered to be true multicampus colleges by the Katsinas-Lacey classifications of two-year colleges (Carnegie Foundation for the Advancement of Teaching [Carnegie Foundation], n.d.; Katsinas & Lacey, 1996).

The Iowa Department of Education (2015) classifies the 15 community college areas as the following:

- Area I: Northeast Iowa CC-(NICC) Administrative Center, Box 400, Calmar, Iowa 52132 - Fall 2015 Enrollment 4,865
• Area II: North Iowa Area CC- (NIACC) Administrative Center, 500 College Drive, Mason City, Iowa 50401 - Fall 2015 Enrollment 2,947
• Area III: Iowa Lakes CC- (ILCC) Administrative Center, 19 South 7th Street, Estherville, Iowa 51334 - Fall 2015 Enrollment 2,366
• Area IV: Northwest Iowa CC- (NCC) Administrative Center, 603 West Park Street, Sheldon Iowa 51201-1046 - Fall 2015 Enrollment 1,624
• Area V: Iowa Central CC- (ICCC) Administrative Center, 330 Avenue M, Fort Dodge, Iowa 50501 - Fall 2015 Enrollment 5,634
• Area VI: Iowa Valley CC district (it is comprised of Marshalltown CC and Ellsworth CC) – (IVCCD) Administrative Center, 3702 South Center Street, Marshalltown, Iowa 50158 - Fall 2015 Enrollment 2,761
• Area VII: Hawkeye CC- (HCC) Administrative Center, 1501 East Orange Road, Box 8015, Waterloo, Iowa 50704 - Fall 2015 Enrollment 5,371
• Area IX: Eastern Iowa CC District- (EICC) Administrative Center, 306 West River Road, Davenport, Iowa 52801 - Fall 2015 Enrollment 8,383
• Area X: Kirkwood CC- (KCC) Administrative Center, 6301 Kirkwood Blvd., S.W., Box 2068, Cedar Rapids, Iowa 52406-2068 - Fall 2015 Enrollment 14,814
• Area XI: Des Moines Area CC- (DMACC) Administrative Center, 2006 South Ankeny Blvd. Ankeny, Iowa 50021 - Fall 2015 Enrollment 22,298
• Area XII: Western Iowa Tech CC- (WITCC) Administrative Center, 4647 Stone Avenue, Box 5199, Sioux City, Iowa 51102-5199 - Fall 2015 Enrollment 6,152
• Area XIII: Iowa Western CC – (IWCC) Administrative Center, 2700 College Road, Box 4-C, Council Bluffs, Iowa 51502-3004- Fall 2015 Enrollment 6,562
• Area XIV: Southwestern CC – (SWCC) Administrative Center, 1501 West Townline Street, Creston, Iowa 50801 - Fall 2015 Enrollment 1,656
• Area XV: Indian Hills CC- (IHCC) Administrative Center, 525 Grandview Avenue, Ottumwa, Iowa 52501 - Fall 2015 Enrollment 4,773
• Area XVI: Southeastern CC- (SCC) Administrative Center, 1015 South Gear Avenue, Box 180, West Burlington, Iowa 52655 – 0180 Fall 2015 Enrollment 2,868

Through Iowa legislation, an Area VIII was also established (Iowa Department of Education, 2015) but it is currently being served by an Area I community college, Northeast Iowa CC.

Looking at Katsinas and Lacey’s (1996) five categories of classifications of two-year colleges by size based on full-time enrollment (FTE), Iowa is diverse within the 15 community college areas representing the state. The five categories based on full time enrollment are the following: very small (<500), Small (500–1,999), medium (2000–4,999), large (5,000–9,999), and very large (>10,000). Based on these categories, Iowa has four small community colleges, nine medium community colleges, one community college that is large and two that are very large. The four small community colleges are Northwest Iowa CC, Marshalltown CC, Ellsworth CC, and Southwestern CC). The nine medium community colleges are Northeast Iowa CC, North Iowa CC, Iowa Lakes CC, Iowa Central CC, Hawkeye CC, Western Iowa Tech CC, Iowa Western CC, Indian Hills
CC, and Southeastern CC). The large community college is Eastern Iowa CC District, composed of three community colleges, Clinton CC, Scott CC and Muscatine CC. The two very large community colleges are Kirkwood CC and Des Moines Area CC.

The Iowa Association of Community College Trustees provided assistance in contacting the Iowa community colleges and urging them to participate in the study. Individual contacts were made and lists of community college leaders were compiled for each community college. A timeline was established and goals for responses were set. The distribution list was finalized for each college based off of the community leaders identified by the definition of a leader for this study.

Population and sample

For the purposes of this study, a leader is a person who leads or commands a group, organization, or country. The Iowa Community College system houses 15 different community college areas. These institutions have different organizational structures and define roles differently. Some have clear and traditional roles of executive leadership, which may include a president, vice-president(s), chief financial officer, provosts, chancellors, and deans. Leaders could further be defined as those that have administrative duties, along with a professional staff or faculty role. These may include directors, associate directors, coordinators, or faculty department chair positions at the various campuses. Based on the definition of a leader used for the study, the Iowa community college districts provided contact information for 468 leaders who were then invited to participate in the study. 229 community college leaders responded to at least some of the survey questions, for a response rate of 48.9 percent.
Data collection

The survey was administered to community college leaders at the 15 Iowa community college districts using the Qualtrics survey software. Working with the Iowa Association of Community College Trustees and individual Iowa community colleges, I obtained the names and corresponding e-mail addresses for the community college leaders employed in the Summer 2016 semester. At the onset of the survey, an e-mail was sent to all of the community college leaders providing them with a brief background of the study, as well as a link to access the Qualtrics survey. They were given instructions on how to complete the survey in Qualtrics. The participants were also informed that all data would be stored on password-protected computers. They were also informed that their information would remain confidential and results would be presented so that no personal identifiers would be revealed. The survey was sent to 14 of the Iowa Community College Areas on June 24, 2016. The last of the Iowa community colleges, Iowa Western was sent the survey on August 11th, 2016. The survey closed for all 15 of the Iowa community colleges on September 20th, 2016.

Variables in the study

The purpose of this study was to ascertain the level of data literacy, data-driven decision making, culture, collaboration and advocacy among leaders at the 15 Iowa community college districts and how these factors guide data-driven decision making, influencing student success. The study utilized variables that were stated in previous research and established in previous literature. This study utilized models to better understand the impact of data driven decision making and specific variables impact student success. Student success is posited the literature as being the dependent variable
in the current goals and strategies of community colleges. The other 26 independent variables were chosen according to the study’s focus on data-driven decision making and the AACC 21st-Century Initiative community college leadership competencies and recommendations.

**Dependent variables**

The dependent variable in this study was the student success construct developed through exploratory factor analysis and the six variables in question 20 of the survey. The student success construct was formed from computing the variables Q20_1, Q20_2, Q20_3, Q20_4, Q20_5, and Q20_6 into the construct labeled student success. This construct reflects the degree to which the administrators perceived the use of data to inform policies and practices related to student success.

**Independent variables**

To answer the research questions for this study, a number of independent variables were employed for the descriptive, exploratory factor, comparative, and multiple regression analyses. 26 independent variables consisted were employed to investigate the data.

*Descriptive variables.* After reviewing the literature, demographics and background characteristics were valuable information needed to collect to help inform the study. For this current research we used the following demographic and background characteristic questions: Q6 (number of years in current position), Q7 (Age), Q8 (Gender), Q9 (Race/Ethnicity), and Q10 (highest degree earned).

*Exploratory factor variables.* The research was intended to better understand the influence of certain factors in regards to data-driven decision making on student success.
To better understand if there were relationships present, the following variables were examined: Q19_1, Q19_2, Q19_3, Q19_5, Q19_6, Q19_9, Q19_10, Q20_1, Q20_2, Q20_3, Q20_4, Q20_5, Q20_6, Q28_1, Q28_2, Q28_3, Q28_4, Q28_5, Q28_6, Q28_7, Q28_8, Q29_1, Q29_2, Q29_3, Q29_4, Q29_5, Q29_6.

Question 19 asks specific questions to better understand the culture and process at community colleges perceived by the community college leaders. It asks them to rate their agreement with statements regarding conversations about data, decision making, and student success on their respective campuses. Question 20 is also included in the culture and process questions. This question asks community college leaders to provide feedback on their best estimate or perceived view of how data are being used in various functional areas of their institutions directly related to student success.

Question 28 and 29 are from the section that specifically addresses the American Association of Community College’s *Community College Leader Competencies*. Question 28 speaks directly to Collaboration and the level of preparedness that each leader feels they possessed when beginning their first leadership position. Question 29 speaks directly to Community College Advocacy and the level of preparedness that each leader feels they possessed when beginning their first leadership position.

*Comparative analyses.* From the exploratory factor analysis, we discovered five new constructs with an eigenvalue greater than 1. Further analysis of the reliability (see Results, Table 4.7) of the constructs was conducted before confirming they were constructs we could move forward with for the remainder of the investigation. The five new constructs are Student Success, Data-driven decision making Culture (DDDMCulture), Data-driven decision making Institutional Student Success (DDDM
ISS), Collaboration, and Community College Advocacy (CCAdvocacy). The five new constructs will be discussed in more detail later in Chapter 4. I used these constructs and a recoded Q2 to recognize administrators versus non-administrators to conduct independent t-test analysis for the comparative analyses.

**Multiple regression.** Within the model of multicollinearity regression there were three blocks consisting of 9 independent variables. These were Q6 (number of years in current position), Q7 (Age), Q8 (Gender), Q9 (Race/Ethnicity), and Q10 (highest degree earned) later recoded into 10_new, Collaboration construct, Community College Advocacy construct, DDDM Culture construct, and the DDDM ISS construct.

**Data analysis**

The variables and data included in this study were quantitatively analyzed using IBM SPSS Statistics 23.0 for Windows. Data analysis, including descriptive, correlation, comparative and inferential statistics, was utilized to answer each individual question of the study’s research.

**Descriptive statistics**

Descriptive analysis was used to answer the first research question: “What are the demographics and background characteristics among community college leaders (gender, education level, age, and years of experience) who make the decisions towards student success?” Demographic data and background characteristics were analyzed using frequencies and comparative analyses to provide a better understanding of the demographics of the community college leaders of the 15 participating Iowa community colleges. The demographic variables analyzed were number of years in current position, age, race/ethnicity, gender and highest degree earned.
Exploratory factor analysis

Exploratory factor analysis was conducted to answer the second research question: “Is there any inter-relationship among variables that determine community college leaders’ use of data for decision making around student success?” An exploratory factor analysis was conducted to determine if any intercorrelations existed between variables related to data-driven decision making for community college student success. 27 variables were entered into the exploratory factor analysis using IBM Statistical SPSS 23. Many researchers will only consider a factor meaningful if it has an eigenvalue of at least 1.0 (Urdan, 2010). For this research, due to our sample size being smaller than other recommended tests like the scree test, we followed Urdan and Kaiser’s suggestion to keep factors with an eigenvalue of at least 1.0. The constructs were analyzed on their Cronbach’s alpha reliability, and constructs with a Cronbach’s alpha equal to .70 or higher were considered acceptably reliable (Urdan, 2010). The 27 variables included in the exploratory factor analysis produced five constructs related to data-driven decision making for community college student success. The constructs were further analyzed for reliability and all produced a Cronbach’s alpha higher than .70. The five new constructs were then further utilized to answer the remaining research questions.

Comparative analysis

A comparative analysis was conducted to address research question 3: “Are there statistically significant differences in data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy between administrators and non-administrators in regards to student success?” This research question was designed to capture any differences in the new constructs between
administrators and non-administrators. Independent t-tests were conducted between administrators and non-administrators on selected variables. A cross tabulation and Pearson Chi Square analysis were conducted on the variables that were identified as categorical variables vs. being analyzed as numerical numbers. For this study that was for the demographics Q8-Gender and Q9-Race/Ethnicity between Administrators and Non-Administrators.

**Multiple regression analysis**

Regression analysis was used to answer question 4: “*To what extent do data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy predict the level of data usage in promoting student success?*”

This question was designed to determine the extent to which the new constructs can be used to predict student’s success. Multiple linear regression was used to test the hypothesis to confirm the relationship between independent variables and dependent variables. The following regression equation was used to identify how much the new constructs and background factors predicted student success:

$$Y_i = B_0 + B_1X_i + e_i$$

where

$B_1$ refers to the effect on $X_i$ on student’s success, controlling for the other values of $X$. $X_i$ refers to different factors to predict a student’s success.
Ethical considerations

When research involves human participants, studies must be administered within the policies established by the Institutional Review Board (IRB; Creswell, 2009) therefore, prior to administering the survey, I applied for and was granted approval by the Iowa State University IRB. The research was granted exempt status, and the IRB application was approved on September 28, 2016. (Appendix C).

Each of the participating institutions was provided with a copy of the Iowa State University IRB application and the approval letter prior to the onset of the survey. All questions regarding IRB status by the participating institutions were answered in entirety prior to conducting the survey.

The responses collected from the survey will remain confidential. Each responder was provided with a unique identifier, and all personal data (name and email address) were removed from the dataset. During my research, I was in direct communication with the Office of Community College Research & Practice to ensure that all possible measures were taken to maintain the confidentiality of all respondents throughout the course of the study.

Limitations

There are five obvious limitations of this study. The first limitation is that the CCDL survey, while reduced, is still long, and the time that this level of community college leader has to complete surveys may have led to community college leaders beginning the survey and dropping out at various points of the survey. While our response rate was very good for this type of study, there is still more to be done to
improve the response rate. A high response rate is important for any study and increases the robustness of the survey findings.

The second limitation is that responses are subject to the individual biases of each community college leader’s self-perception of data-driven decision making, collaboration, community college advocacy and student success.

The third limitation is that this study was conducted at 15 Iowa community college districts in the state of Iowa. The results are not generalizable to all community colleges in the United States. The leaders in the study are not representative of all leaders in community colleges in the country.

The fourth limitation is that the sample size was small. There were enough responses to validate the survey, but a larger sample size is needed to really understand if the results are significant to community college leaders around the country.

The fifth limitation may be the lack of information on this topic from faculty and staff. Information attained from front-line individuals may be valuable, as these are the employees that are often practicing the policies put into place by the institutional leaders who may or may not be using data to make decisions.

**Delimitations**

The study was delimited to survey items about competencies framed in relationship to the AACC’s (2012) 2nd Edition *Competencies for Community College Leaders*. It was delimited to community college leaders working at the 15 Iowa community college districts. It will not be used to examine or measure the effectiveness of job performance of community college leaders.
Summary

This present study sought to ascertain the level of data literacy, data-driven decision making, culture, collaboration, and advocacy among the leaders at the 15 Iowa community college districts, as well as how these factors guide data-driven decision making influencing student success. This study utilized a quantitative research design using an independently created survey administered at 15 Iowa community college districts. This chapter presented an overview of the methodology guiding the study. It included the research questions, hypotheses, research design, survey instrument, setting, population and sample, data collection, theoretical construct, variables, methods of data analysis, ethical considerations, limitations, and delimitations. The following two chapters will present the results of the study outlined in this chapter, as well as discussion of the significance of the results and the implications for future research, policy, and practice. The information derived from this study will add to the current body of knowledge on community college leaders utilizing data, data-driven decision making, and factors impacting student success at community colleges.
CHAPTER 4. RESULTS

Introduction

This chapter provides a review of the results of the data analysis. This chapter will present a comprehensive summary of detailed results and statistics relating to all research questions. The results are provided in four sections that correspond with the four research questions that guided this study and a concluding summary section.

In the first section, I present the descriptive analysis. The first section addresses research question one. It provides the results of the descriptive analysis for the entire sample of community college leaders from the 15 Iowa community college districts. The total number of respondents to the CCDL survey was 220 community college leaders at the 15 Iowa community college districts. The demographics of the community college leaders in the CCDL survey were descriptively analyzed based on primary work responsibilities: administrations, faculty, or professional staff, number of years in current position, age, gender, race/ethnicity, highest degree earned, and major field of study. The descriptive analysis was conducted in three parts: (a) all survey respondents, (b) those who selected administrators, (c) those who selected non-administrators (faculty/professional staff). Non-administrators for this study qualify for those who answered faculty or professional staff for Q2 “Which of the following most closely corresponds to your primary work responsibilities?” A summary of the descriptive analysis of all variables is provided in Table 4.1.
Table 4.1 Demographic Descriptive Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>All respondents</th>
<th>Administrators</th>
<th>Non-Administrators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Number of Years in your current position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1yr -5yrs</td>
<td>98</td>
<td>44.5</td>
<td>73</td>
</tr>
<tr>
<td>6yrs -10yrs</td>
<td>59</td>
<td>26.8</td>
<td>37</td>
</tr>
<tr>
<td>11yrs -15yrs</td>
<td>29</td>
<td>13.2</td>
<td>16</td>
</tr>
<tr>
<td>16 yrs - 20yrs</td>
<td>15</td>
<td>6.8</td>
<td>7</td>
</tr>
<tr>
<td>21yrs - 25 yrs</td>
<td>2</td>
<td>0.9</td>
<td>0</td>
</tr>
<tr>
<td>26yrs - 30yrs</td>
<td>9</td>
<td>4.1</td>
<td>3</td>
</tr>
<tr>
<td>Missing (no response)</td>
<td>8</td>
<td>6.8</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>212</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>37.7</td>
<td>62</td>
</tr>
<tr>
<td>Female</td>
<td>131</td>
<td>59.5</td>
<td>75</td>
</tr>
<tr>
<td>Missing (no response)</td>
<td>6</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-35</td>
<td>21</td>
<td>9.5</td>
<td>11</td>
</tr>
<tr>
<td>36-45</td>
<td>59</td>
<td>26.8</td>
<td>39</td>
</tr>
<tr>
<td>46-55</td>
<td>69</td>
<td>31.4</td>
<td>39</td>
</tr>
<tr>
<td>56-65</td>
<td>66</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td>65 or greater</td>
<td>5</td>
<td>2.3</td>
<td>5</td>
</tr>
<tr>
<td>Missing (no response)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-resident alien</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>Hispanics of any race</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>Black or African</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American</td>
<td>8</td>
<td>3.6</td>
<td>6</td>
</tr>
<tr>
<td>Native Hawaiian or Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>200</td>
<td>90.9</td>
<td>128</td>
</tr>
<tr>
<td>2 or more</td>
<td>3</td>
<td>1.4</td>
<td>2</td>
</tr>
<tr>
<td>Missing (no response)</td>
<td>6</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results of the descriptive analysis were calculated using frequency statistics. The results indicate that the Iowa community college leaders in each group responded similarly to questions regarding their background and demographic characteristics. In all three groups, the largest percentage of Iowa community college leaders were female, between the ages of 46–55, in their position 1 year –5 years, White, with a master’s level education, and with a degree in educational administration. In general, these results are indicative of the Iowa community college leadership at the 15 Iowa community college districts. It is also mirrors the current student enrollment at Iowa community colleges, the majority of which is made up of White women (Annual Conditions of Iowa Community Colleges, 2015). Slightly more women (52.8 percent, N=75) than men (43.7 percent N=62) classified themselves as administrators.

A majority 59.5 percent (N=131) of the community college leaders were women. This held true for administrators and non-administrators. This gap was smaller for administrators, as noted above. The largest age range of community college leaders was the 46–55 age range at 31.4 percent (N=69) of the community college leaders being
represented. The next largest age range, 36–45, was the second-largest age group, representing 26.8 percent (N=59) of the community college leaders. Together, the majority (N=128) of the community college leaders were in the range of 36–55 (58.2 percent). An overwhelming amount of the community college leaders were White, 90.9 percent (N=200). Black or African American represented the next highest race/ethnicity group of community college leaders at 3.6 percent (N=8). The majority of leaders had earned their master’s degrees, 55 percent (N=121). The majority of the 121 community college leaders with master’s degrees were administrators, with 80 reporting to have a master’s degree. The next two highest groups represented for highest degree earned were doctorate of Ph.D., 16.4 percent (N=36) and bachelor’s degree, 13.2 percent (N=29). The last demographic represented by Table 4.1 was Q6 (number of years in current position). 1year–5years represented the largest group 44.5 percent (N=98) of community college leaders. 6years–10years represented the next largest group at 26.8 percent (N=59). 11yrs–15years represented the third largest group, or 13.2 percent (N=29) of community college leaders.

The next highest age brackets behind the 46–55 group (31.4 percent, N=69), were the 55–65 age group (30 percent, N=66) and the 36–45 age group (26.8 percent, N=59). This supports the results from the AACC survey finding that 75 percent of current community college leaders will retire by 2022 (AACC, 2012). The next highest range of responses to number of years in current position was 6years–10years (26.8 percent, N=59) and 11years–15years (13.2 percent, N=29). This again supports that transition is currently occurring in new Iowa community college leadership.
The overall number of Iowa community college leader respondents who identified as white was 90.9 percent (N=200). This is representative of overall Iowa state demographics as majority 91.3 percent white (Iowa State Data Center, 2014). The next highest race/ethnicity for Iowa community college leaders was Black or African American at 3.6 percent (N=8).

When asked to report their level of education, Iowa community college leaders indicated that a master’s degree (55 percent, N=121) was the highest level of degree earned for the majority of respondents. This holds with my own observations and conversations with current community college administrators; a majority of Iowa community colleges encourage their potential administrators or newly hired administrators to have their master’s degree, and work with the four state regent schools to help make these programs suitable and accessible for their staff. The next highest degree earned was Ph.D. at 16.4 percent (N=36); if respondents with an Ed. D or J.D. are included in this group, doctorates account for the highest degree earned for 21.9 percent (N=48) of respondents. Three (2.1 percent) administrators reported their highest degree earned as an AA/AAS, an unexpected finding. When asked to indicate degree of study, holding to true to my own observations, the majority of the community college respondents reported Educational Administration, 28.6 percent (N=63), although respondents also listed “other” at 35 percent (N=77).

In the second section of the findings, I present the exploratory factor analysis (EFA). The second section addresses research question two. It provides the results of the exploratory analyses and the development of the constructs for student success, data-driven decision making culture (DDDM Culture), data-driven decision making
institutional student success (DDDM ISS), collaboration, and community college advocacy (CC Advocacy), which influence community college leaders’ data driven decision-making toward student success. When researchers use multiple measures to represent a single underlying construct, they must perform statistical analyses to determine how well the items in one construct go together, and how well the items that are supposed to represent one construct separate from the items meant to represent a different construct (Urdan, 2010). In Phase 2, I was able to identify four new constructs, and since the survey had been improved upon for Phase 3, I wanted to see if the same constructs would hold or if any new constructs would emerge. To my surprise, this EFA produced five constructs. It should be noted that the collaborative pilot study did not generate Urdan’s (2010) general rule of 30 cases for the first observed variable and then 10 cases for each additional observed variable. The responses needed for that general rule to apply would have been 290 cases, and there were only 220 responses for the pilot study. Other researchers have stated that each variable that is subjected to factor analyses should have at least 5 to 10 observations (Comrey & Lee, 1992). Normally the ratio of respondents to variables should be at least 10:1, and the factors are considered to be stable and to cross-validate with a ratio of 30:1 (Yong and Pearce, 2013).

Many researchers will only consider a factor meaningful if it has an eigenvalue of at least 1.0 (Urdan, 2010). There are other criteria to use as well to determine the number of factors for analysis. The Kaiser criterion suggests retaining all factors that have an eigenvalue above 1 (Kaiser, 1960). Jolliffe’s criterion recommends retaining all factors with loading of .70 or above (Jolliffe, 1986) For this research, due to the sample size being smaller than other recommended tests like the scree test, I followed Urdan and
Kaiser’s suggestions to keep factors with an eigenvalue of at least 1.0. An exploratory factor analysis using varimax rotation was conducted using SPSS 23.0. Using principle component extraction, SPSS identified five constructs with eigenvalues greater than 1.0. Typically, research suggests that factors with a loading greater than .50 be accepted, although factors loading of .70 or above is preferred (Jolliffe, 1986). Factor loading at .70 is adequate, .60 is questionable, and below .50 is unacceptable (Kline, 2011). For this research I accepted all factors loading of .50 or above.

Once the variables for the constructs were determined, the constructs were tested for reliability. There are several statistics that measure reliability, but the most commonly used is Cronbach’s alpha (Urdan, 2010). For this research the Cronbach’s alpha was utilized to measure the reliability of these four new constructs. Cronbach’s alpha scores between .6–.7 indicate acceptable reliability and .8 or higher indicates good reliability (Chen, 2015). Reliabilities of .95 or higher are not necessarily desirable, since that means that the survey items may be entirely redundant (Chen, 2015). Following Urdan’s threshold (2010), for this research, accepted constructs had a Cronbach’s alpha equal to or higher than .70.

Collaboration was the first construct extracted from the rotated varimax with Kaiser Normalization. It produced an eigenvalue of 10.147, while explaining 21.747 percent. The results are shown in Table 4.2. This construct had loading factors that ranged from .650 to .840 and had a high Cronbach’s alpha score (alpha = .936) indicating good reliability (Chen, 2015). The variables from Question 28 in the construct represented the variables around the AACC framework of Collaboration. The variables were analyzed using scores from a 5-point Likert-style scale ranging from 1 (Not
prepared) to 5 (Strongly Prepared). The means for the variables identified in the construct ranged from 3.45 to 4.03. Three of these items had factor loadings greater than .8: Q28_2 (Demonstrate cultural competence in global society, .840), Q28_8 (Facilitate shared problems solving and decision making, .812), and Q28_7 (Develop, enhance, and sustain teamwork and cooperation, .803). Two more had factor loadings greater than .75: Q28_6 (Manage conflict and change by building and maintaining productive relationships, .791) and Q28_1 (Embrace and employ the diversity of individuals, cultures, values, ideas, and communication styles, .768).

Table 4.2 Exploratory Factor Analysis Results for Collaboration

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate cultural competence in a global society</td>
<td>0.840</td>
</tr>
<tr>
<td>Facilitate shared problems solving and decision-making</td>
<td>0.812</td>
</tr>
<tr>
<td>Develop, enhance, and sustain teamwork and cooperation</td>
<td>0.803</td>
</tr>
<tr>
<td>Manage conflict and change by building and maintaining productive relations</td>
<td>0.791</td>
</tr>
<tr>
<td>Embrace and employ the diversity of individuals, cultures, values, ideas, and communication styles</td>
<td>0.768</td>
</tr>
<tr>
<td>Establish networks and partnerships to advance the mission of the community college</td>
<td>0.727</td>
</tr>
<tr>
<td>Involve students, faculty, staff, and community members to work for the common good</td>
<td>0.714</td>
</tr>
<tr>
<td>Work effectively and diplomatically with legislators, board members, business leaders, accreditation organizations, and others</td>
<td>0.650</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>10.147</td>
</tr>
<tr>
<td>% of variance</td>
<td>21.747</td>
</tr>
</tbody>
</table>
Community College Advocacy (CC Advocacy) was the second construct extracted from the rotated varimax with Kaiser Normalization. It produced an eigenvalue of 4.694, while explaining 17.054 percent of the variance. The results are shown in Table 4.3. This construct had loading factors ranging from .614 to .838 and had a high Cronbach’s alpha score (alpha = .950) indicating very good reliability but some possible redundancy in the survey (Chen, 2015). The variables from Question 29 in the construct represented the variables around the AACC framework of Community College Advocacy. The variables were analyzed using scores from a 5-point Likert-style scale ranging from 1 (Not prepared) to 5 (Strongly Prepared). The means for the variables identified in the construct ranged from 3.74 to 4.13. Four of these items had factor loadings greater than .8: Q29_2 (Demonstrate commitment to the mission of community colleges and student success through the scholarship of teaching and learning, .838), Q29_4 (Advocate the community college mission to all constituents and empower them to do the same, .824), Q29_6 (Represent the community college in a variety of settings as a model of higher education, .816), and Q29_3 (Promote equity, open access, teaching, learning, and innovation as primary goals for college, .812). One item had a factor loading greater than .75: Q29_5 (Advance lifelong learning and support a learning-centered environment, .789).

Table 4.3 Exploratory Factor Analysis Results for Community College Advocacy

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC Advocacy (α = .950)</td>
<td></td>
</tr>
<tr>
<td>Demonstrate commitment to the mission of community colleges and student</td>
<td>0.838</td>
</tr>
<tr>
<td>success through the scholarship of teaching and learning</td>
<td></td>
</tr>
<tr>
<td>Advocate the community college mission to all constituents and empower</td>
<td></td>
</tr>
<tr>
<td>them to do the same</td>
<td></td>
</tr>
<tr>
<td>Represent the community college in a variety of settings as a model of</td>
<td></td>
</tr>
<tr>
<td>higher education</td>
<td></td>
</tr>
<tr>
<td>Promote equity, open access, teaching, learning, and innovation as</td>
<td></td>
</tr>
<tr>
<td>primary goals for college</td>
<td></td>
</tr>
<tr>
<td>Advance lifelong learning and support a learning-centered environment</td>
<td></td>
</tr>
<tr>
<td>(Advance lifelong learning and support a learning-centered environment,</td>
<td></td>
</tr>
<tr>
<td>.789).</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.3 continued

Advocate the community college mission to all constituents and empower them to do the same 0.824

Represent the community college in a variety of settings as a model of higher education 0.816

Promote equity, open access, teaching, learning, and innovation as primary goals for college 0.812

Advanced lifelong learning and support a learning-centered environment 0.789

Value and promise diversity, inclusion, equity, and Academic excellence 0.614

Eigenvalues 4.694

% of variance 17.054

Student Success was the third construct extracted from the rotated varimax with Kaiser Normalization. This construct produced an eigenvalue of 1.863, while explaining 14.952 percent of the variance. The results of the exploratory factor analysis for the student success construct are displayed in Table 4.4. The variables from Question 20 represent the variables for data usage by leaders at community colleges at their respective institutions directed toward student outcomes. The construct reflects the degree to which the administrators perceive the use of the data to inform policies and practices related to student success. The variables were analyzed using scores from a 5-point Likert-style scale ranging from 1 (We do not collect usable data) to 5 (We create and use predictive analyses or reports that may trigger proactive responses). The means of the variables in the construct ranged from 2.75 to 3.38. This construct had loading factors ranging from .703 to .806 and had a high Cronbach’s alpha score (alpha = .868) indicating good
reliability (Chen, 2015). Three of these items had factor loadings greater than .75: Q20_3 (Student Degree Planning, .806), Q20_4 (Student Progress (retention, graduation, etc., .784), and Q20_1 (Student Learning (real-time or on-demand assessment and feedback, .758). The remaining three variables all had loading factors above .7.

Table 4.4. Exploratory Factor Analysis Results for Student Success

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Success ($\alpha = .868$)</td>
<td></td>
</tr>
<tr>
<td>Student Degree Planning</td>
<td>0.806</td>
</tr>
<tr>
<td>Student Progress (retention, graduation, etc.)</td>
<td>0.784</td>
</tr>
<tr>
<td>Student Learning (real-time or on-demand assessment and</td>
<td>0.758</td>
</tr>
<tr>
<td>feedback)</td>
<td></td>
</tr>
<tr>
<td>Enrollment management, admissions, and recruiting</td>
<td>0.735</td>
</tr>
<tr>
<td>Student Learning (learning outcomes, course completion)</td>
<td>0.723</td>
</tr>
<tr>
<td>Cost to complete degree</td>
<td>0.703</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>1.863</td>
</tr>
<tr>
<td>% of Variance</td>
<td>14.952</td>
</tr>
</tbody>
</table>

Data-Driven Decision Making Culture (DDDM Culture) was the fourth construct extracted from the rotated varimax with Kaiser Normalization. This construct produced an eigenvalue of 1.273, while explaining 9.459 percent of the variance. The results of the exploratory factor analysis for the data-driven decision making culture (DDDM Culture) construct are displayed in Table 4.5. The factors from Question 19 in the construct represented a majority of the variables around how leaders at community colleges viewed how the culture was around data, data decision making and student success. The variables were analyzed using a scores from a 5-point Likert style scale ranging from 1(Strongly disagree) to 5 (Strongly Agree). The means of the variables in the construct ranged from 3.10 to 3.89. This construct had loading factors ranging from .568 to .810 and had a high
Cronbach’s alpha score (alpha = .783) indicating acceptable reliability (Chen, 2015). One of these items had a factor loading greater than .8: Q19_2 (My institution’s administrators generally accept the use of data for decision making, .810).

**Table 4.5 Exploratory Factor Analysis Results for Data-Driven Decision Making Culture**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDDM Culture (α = .783)</td>
<td></td>
</tr>
<tr>
<td>My institution's administrators generally accept the use of data for decision making</td>
<td>0.810</td>
</tr>
<tr>
<td>My institution is ready to put resources behind the research necessary to implement DDDM</td>
<td>0.685</td>
</tr>
<tr>
<td>My institution has a culture that accepts the use of data to make decisions</td>
<td>0.598</td>
</tr>
<tr>
<td>My institution has had conversations regarding the sustainability of DDDM effort</td>
<td>0.568</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>1.273</td>
</tr>
<tr>
<td>% of variance</td>
<td>9.459</td>
</tr>
</tbody>
</table>

*Data-Driven Decision Making Institutional Student Success (DDDM ISS)* was the fifth construct extracted from the rotated varimax with Kaiser Normalization. This construct produced an eigenvalue of 1.025, while explaining 7.164 percent of the variance. The results of the exploratory factor analysis for the data-driven decision making institutional student success (DDDM ISS) construct are displayed in Table 4.6. The factors from Question 19 in the construct represented the remaining variables around how leaders at community colleges viewed the culture around data, data decision making, and student success. The variables were analyzed using scores from a 5-point Likert style scale ranging from 1 (Strongly disagree) to 5 (Strongly Agree). The means of the variables in the construct ranged from 3.10 to 3.89. This construct had loading factors ranging from .568 to .810 and had a high Cronbach’s alpha score (alpha = .783).
indicating acceptable reliability (Chen, 2015). One of these items had a factor loading greater than .8: Q19_2 (My institution’s administrators generally accept the use of data for decision making, .810). During Phase 2 of this investigation, during the EFA for the pilot study evidence was presented for a new construct not anticipated from the research literature. This construct, Data-Driven Decision Making Student Model, added further evidence to the model for institutional action by providing a construct aligning with data-driven decision making needed for institutional student success. It included variables from Q14, Q15 and Q27 in the pilot study. They are now Q19, Q20 and Q28 in the current study. From the refining of the survey instrument, the construct was simplified, but maintained alignment with the overall model.

Table 4.6 Exploratory Factor Analysis Results for Data-driven Decision Making Institutional Student Success

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDDM ISS (α = .727)</td>
<td></td>
</tr>
<tr>
<td>My institution's faculty largely accept the use of DDDM for improving teaching and learning</td>
<td>0.675</td>
</tr>
<tr>
<td>My institution has shared the definition of “student success” with faculty, staff, and students alike</td>
<td>0.646</td>
</tr>
<tr>
<td>My institution has a clear vision of where it can make changes to help students be more successfully academically</td>
<td>0.527</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>1.025</td>
</tr>
<tr>
<td>% of variance</td>
<td>7.164</td>
</tr>
</tbody>
</table>

The exploratory factor analysis produced five latent constructs. The five new constructs were formed with the intent of understanding the variables impacting data-
driven decision making influencing student success. In order to answer the second research question of the study: “Is there any inter-relationship among variables that determine community college leaders’ use of data for decision making around student success?”, a null hypothesis was proposed: “There is no inter-relationship among variables that determine community college leaders’ use of data for decision making around student success.” The findings of the exploratory factor analysis suggest that the null hypothesis was rejected. Each of the variables that emerged from the EFA was consistent with what is found in existing literature (Tinto & Pusser, 2006; AACC, 2012; Duree 2007, Rabey, 2011, Bischel 2012), except for one, which was consistent with earlier findings in Phase 2 and is discussed later in detail.

The collaboration construct produced loading factors that ranged from .650 to .840 and a Cronbach alpha score of .936. Community college advocacy had factor loading ranging from .614 to .838 and a Cronbach alpha score of .950. The student success construct had a loading factor from .703 to .806 and a Cronbach alpha score of .868. Data-driven decision making culture had a loading factor from .568 to .810 and a Cronbach alpha score of .783. The data-driven decision making institutional student success had a loading factor ranging from .527 to .675 and a Cronbach alpha score of .727.

It should be noted that in Phase 2, of the four constructs formed in the EFA of the variables, Collaboration and Community College Advocacy were combined into one variable. However, I felt it should have been two separate constructs. From the clean-up of the survey and testing of reliability and validity, it was good to see one of the results of the EFA for this construct separated into the two individual constructs of Collaboration
and Community College Advocacy. Similarly, for the construct of Student Success, two of the variables were eliminated and included instead in another construct. With testing for reliability and validity, the results were clarified so that all of the variables in Q20 are now included in the new Student Success construct; furthermore, this grouping and raised the Cronbach’s alpha for the construct, making it even more reliable.

During Phase 2 of this investigation, during the EFA for the pilot study evidence was presented for a new construct, Data-driven Decision Making Student Model. This construct was not anticipated from the literature review, but it did add further evidence to the model for institutional action by providing a construct aligning with data-driven decision making needed for institutional student success. It included variables from Q14, Q15, and Q27 in the pilot study. They are now Q19, Q20, and Q28 in the current study. The construct was simplified during refining of the survey, and maintained alignment with this overall model needed for institutional student success, further supporting the model for institutional action at community colleges around data-driven decision making for student success. The student success construct adds to the evidence of how important data-driven decision making is because this construct is directly related to the perceived data usage to inform policies and practices related to student success.

In the third section, I present the comparative analysis, which addresses the third and fourth research question. It provides the results of the comparative analysis of the independent t-tests to compare the means of administrators and non-administrators (faculty/professional staff). Non-administrators, for this study, are those who answered “faculty or professional staff” for Q2: Which of the following most closely corresponds to your primary work responsibilities?
Table 4.7 provides a summary of testing the independent samples t-tests on the five new constructs: collaboration, community college advocacy (CC Advocacy), student success, data-driven decision making culture (DDDM Culture), and data-driven decision making institutional student success (DDDM ISS), that were confirmed to be reliable in the second section of the exploratory analyses for this study. The variances of the dependent variables within the sample are evaluated through the use of Levene’s test for equality of variances. A statistically significant result produced through the Levene’s test (p< .05) indicates that the variances of the dependent variables are significantly different and that equal variances are not assumed (Urdan, 2010).

Table 4.7 Means, Standard Deviations, and Independent Samples t-Test Results for the Five Constructs

<table>
<thead>
<tr>
<th></th>
<th>Administrators</th>
<th>Non-Administrators</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>3.87 0.70</td>
<td>3.80 0.83</td>
<td>-0.495</td>
<td>94.22</td>
<td>0.622</td>
</tr>
<tr>
<td>CC Advocacy</td>
<td>4.01 0.76</td>
<td>3.89 0.91</td>
<td>-0.841</td>
<td>171.00</td>
<td>0.401</td>
</tr>
<tr>
<td>Student Success</td>
<td>3.03 0.74</td>
<td>2.99 0.76</td>
<td>-0.317</td>
<td>175.00</td>
<td>0.752</td>
</tr>
<tr>
<td>DDDM Culture</td>
<td>3.59 0.64</td>
<td>3.40 0.61</td>
<td>-2.014</td>
<td>192.00</td>
<td>0.045</td>
</tr>
<tr>
<td>DDDM ISS</td>
<td>3.32 0.71</td>
<td>3.23 0.65</td>
<td>-0.837</td>
<td>191.00</td>
<td>0.404</td>
</tr>
</tbody>
</table>

According to Table 4.7, the mean score of the data-driven decision making culture of administrators (3.59) and non-administrators (3.40) had .19 difference. The difference was statistically significant between the two groups (t= -2.01, df=192.00, p=.045) at an alpha level of .05. This was the only independent variable that proved to be statistically significant. The independent samples t-test for differences in the means of the remaining
constructs indicated that there was no statistical difference between administrators and non-administrators.

The comparative analysis examined the data-driven decision making of administrators and non-administrators. In order to answer the third research question of the study: “Are there statistically significant differences in data driven decision-making culture, data driven decision-making institutional student success, collaboration, community college advocacy between administrators and non-administrators in regards to student success?”, a null hypothesis was proposed: “There is no difference in data driven decision-making, culture, community college advocacy and student success between administrators and non-administrators.” The findings of comparative analysis suggested that the null hypothesis was rejected. The results of the independent samples t-tests indicated that there is a statistically significant difference in data-driven decision making culture. This supports findings from EDUCAUSE indicating that culture is important for any process of data-driven decision making to be successful (Bischel, 2012). If the same flow and use of data is not consistent on all levels, the result can be a negative impact on student success.

Table 4.8 provides a summary of testing the of the independent samples t-tests on the selected demographics questions: Q6-Number of years in your current position?, Q7-Age, and Q10-What is your highest degree earned? The variances of the dependent variables within the sample are evaluated through the use of Levene’s test for equality of variances. A statistically significant result produced through the Levene’s test (p<.05) indicates that the variances of the dependent variables are significantly different and that equal variances are not assumed (Urdan, 2010).
According to Table 4.8, the mean score of the *Q6-Number of years in your current position* of administrators (6.58) and non-administrators (10.04) had a 3.82 difference. The difference was statistically significant between the two groups (t=3.656, df=210.00, p=.000) at an alpha level of .05. The mean score of the *Q10-What is your highest degree earned* of administrators (3.55) and non-administrators (2.89) had a .66 difference. The difference was statistically significant between the two groups (t=-3.684, df=211.00, p=.000) at an alpha level of .05. These were the two independent variables that proved to be statistically significant. The independent sample t-test for difference in the mean of the remaining demographic variable question, *Q7-Age*, proved there was no statistical difference between administrators and non-administrators for *Q7-Age*.

Table 4.9 provides a summary of testing the of Pearson chi-square analysis on the selected demographic question, *Q8-Gender* between administrators and non-administrators. This test will show if the categorical variable is associated or independent.
Table 4.9 Cross-Tabulation on Gender for Administrators and Non Administrators

<table>
<thead>
<tr>
<th>Q2_New</th>
<th>Non-Administrator</th>
<th>Count</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% within</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Q2_New</td>
<td>27.30%</td>
<td>27.30%</td>
<td>27.30%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Q8-Gender</td>
<td>25.30%</td>
<td>42.70%</td>
<td>36.00%</td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>9.80%</td>
<td>26.20%</td>
<td>36.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administrator</td>
<td>Count</td>
<td>62</td>
<td>75</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>% within Q2_New</td>
<td>45.30%</td>
<td>54.70%</td>
<td>100.00%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Q8-Gender</td>
<td>74.70%</td>
<td>57.30%</td>
<td>64.00%</td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>29.00%</td>
<td>35.00%</td>
<td>64.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Count</td>
<td>83</td>
<td>131</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>% within Q2_New</td>
<td>38.80%</td>
<td>61.20%</td>
<td>100.00%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Q8-Gender</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>38.80%</td>
<td>61.20%</td>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As Table 4.9 shows, there are more females than males in both non-administrators and administrators. The Pearson chi-square results showed there was a significant relationship between administrators and non-administrators by gender, Pearson Chi Square Value=6.714, DF=1, p<.010.

Table 4.9 provides a summary of testing the of Pearson chi-square analysis on the selected demographic question, *Q9-Race/Ethnicity* between administrators and non-administrators. We used the recoded variable for *Q9-Race/Ethnicity* called *Racesolid* for the analysis. This test will show if the categorical variable is associated or independent.
Table 4.10 Cross-tabulation on Race/Ethnicity* for Administrators and Non Administrators

<table>
<thead>
<tr>
<th>Q2_New</th>
<th>Non-Administrator</th>
<th>Count</th>
<th>Non-White</th>
<th>White</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>72</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>% within</td>
<td></td>
<td>5.30%</td>
<td>94.70%</td>
<td>100.00%</td>
</tr>
<tr>
<td></td>
<td>Q2_New</td>
<td></td>
<td>% within</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within</td>
<td></td>
<td>28.60%</td>
<td>36.00%</td>
<td>35.50%</td>
</tr>
<tr>
<td></td>
<td>Q8- Gender</td>
<td></td>
<td>% of Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td></td>
<td>1.90%</td>
<td>33.60%</td>
<td>35.50%</td>
</tr>
<tr>
<td>Administrator</td>
<td>Count</td>
<td>10</td>
<td>128</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within</td>
<td></td>
<td>7.20%</td>
<td>92.80%</td>
<td>100.00%</td>
</tr>
<tr>
<td></td>
<td>Q2_New</td>
<td></td>
<td>% within</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within</td>
<td></td>
<td>71.40%</td>
<td>64.00%</td>
<td>64.50%</td>
</tr>
<tr>
<td></td>
<td>Q8- Gender</td>
<td></td>
<td>% of Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td></td>
<td>4.70%</td>
<td>59.80%</td>
<td>64.50%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>14</td>
<td>200</td>
<td>214</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within</td>
<td></td>
<td>6.50%</td>
<td>93.50%</td>
<td>100.00%</td>
</tr>
<tr>
<td></td>
<td>Q2_New</td>
<td></td>
<td>% within</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within</td>
<td></td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td></td>
<td>Q8- Gender</td>
<td></td>
<td>% of Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td></td>
<td>6.50%</td>
<td>93.50%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

As Table 4.10 shows, there are majority white community college leaders in both non-administrators and administrators. The Pearson chi-square results showed there was no significant relationship between administrators and non-administrators by Racesolid, Person Chi Square Value=.315, DF=1, p>.574.
The comparative analysis examined the data-driven decision making of administrators and non-administrators. In order to answer the fourth research question of the study: “Is there a difference between administrators and non-administrators based on their demographic characteristics?” a null hypothesis was proposed: “There is no difference in the demographics of administrators and non-administrators.” The findings of comparative analysis suggested that the null hypothesis was rejected. The results of the independent samples t-tests indicated that there is a statistically significant difference in Q6-Number of years in your current position, Q8-Gender, Q10-What is your highest degree earned. This supports findings from the AACC Competencies for Community College Leaders indicating that there is a difference in number of years leaders are in their leadership positions (AACC Competencies for Community College, 2012). If the same flow and use of data is not consistent on all levels, the result can be a negative impact on student success.

In the fourth section, I present the multiple regression analyses, which addresses research question five. Table 4.9 provides the results of the multiple logistic regression regarding the factors influencing student. The findings from the descriptive analyses provided information on administrators’ demographics and background information. The exploratory analyses provided information on which variables have inter-relationships with each other. However, what factors influence and predict student success had not been analyzed. The student success construct was selected to be the dependent variable for this analysis. This construct was selected because this construct contained the core responses of the administrators to perceived levels of data usage for key policies and practices that led to student success. This analysis will help to find the predictors that will
help to improve the administrator’s perceived views. To perform this analysis, a multiple regression analysis was conducted to examine the predictors of the student success construct. A total of nine predictors were entered into the model, creating three blocks of variables for the analysis.

*Table 4.11 Results of Multiple Regression*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th></th>
<th></th>
<th></th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.006</td>
</tr>
<tr>
<td>Constant</td>
<td>3.32</td>
<td>6.922</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of years in current position</td>
<td>-0.004</td>
<td>-0.035</td>
<td>-0.403</td>
<td>0.687</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.004</td>
<td>0.049</td>
<td>0.561</td>
<td>0.575</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.008</td>
<td>0.005</td>
<td>0.060</td>
<td>0.952</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>0.036</td>
<td>0.012</td>
<td>0.142</td>
<td>0.888</td>
<td></td>
</tr>
<tr>
<td>What is your highest degree earned</td>
<td>-0.167</td>
<td>-0.166</td>
<td>-1.985</td>
<td>0.049</td>
<td>0.099</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.909</td>
<td>3.426</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of years in current position</td>
<td>0.006</td>
<td>0.051</td>
<td>0.606</td>
<td>0.546</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.004</td>
<td>0.048</td>
<td>0.577</td>
<td>0.565</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.006</td>
<td>0.004</td>
<td>0.047</td>
<td>0.962</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>-0.006</td>
<td>-0.002</td>
<td>-0.025</td>
<td>0.980</td>
<td></td>
</tr>
<tr>
<td>What is your highest degree earned</td>
<td>-0.174</td>
<td>-0.173</td>
<td>-2.144</td>
<td>0.034</td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>0.353</td>
<td>0.336</td>
<td>2.859</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>CCAdvocacy</td>
<td>0.0001</td>
<td>0.000</td>
<td>0.001</td>
<td>0.999</td>
<td></td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.389</td>
</tr>
<tr>
<td>Constant</td>
<td>0.636</td>
<td>1.305</td>
<td>0.194</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of years in current position</td>
<td>0.002</td>
<td>0.016</td>
<td>0.231</td>
<td>0.817</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.003</td>
<td>0.035</td>
<td>0.505</td>
<td>0.614</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.123</td>
<td>-0.079</td>
<td>-1.208</td>
<td>0.229</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>-0.217</td>
<td>-0.07</td>
<td>-1.091</td>
<td>0.277</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.11 continued

<table>
<thead>
<tr>
<th>What is your highest degree earned</th>
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<th>-0.164</th>
<th>-2.45</th>
<th>0.015</th>
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</tr>
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</tr>
<tr>
<td>DDDM Student Model</td>
<td>0.358</td>
<td>0.321</td>
<td>3.612</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The first block consists of five variables analyzed in this block: Q6 (number of years in current position), Q7 (age), Q8 (gender), Racesolid (Q9-race/ethnicity adjusted), and Q10 (highest degree earned). Q9 was recoded for this analysis as 8=1, 0 = systems missing, and ELSE=0 into Racesolid. Q10 was recoded for this analysis as 1=1, 8=1 value label: Associate’s & below; 2=2 value label: Bachelor’s; 3=3. 4=3 value label: Master’s; and 5 to 7=4 value label: Doctorate. This block only accounts for .01 percent of the variance of the dependent variable. All five of the variables analyzed in Block 1 proved to not be significant predictors of the dependent variable student success.

The second block consists of seven variables. The first five variables from Block 1 are included in these seven variables. The two new added variables are the new constructs for collaboration and community college advocacy. This model showed some improvement compared to the first block. The overall variance for the dependent variable increased from .01 percent in block 1 to 10.1 percent for block 2. There was a change in zero variables having significant predictability of the dependent variable to two variables showing significant predictability of the dependent variable. The first was Q10 (highest degree earned), which shifted from zero predictability in Block 1 to having some predictability in Block 2. Q10 (B= -.174) had a negative impact on the predictability of the dependent variable for Block 2 but was significant with a p=.034 and an alpha value
=.05. The second significant variable was the collaboration construct. Collaboration
(B=.353) had a positive impact on the predictability of the dependent variable, and
demonstrated significance with a p=.005 and an alpha value =.05.

The third block consists of all nine variables. The variables from Block 1 and
Block 2 are included in Block 3, as well as two new variables, the constructs data-driven
decision making culture (DDDM Culture) and data-driven decision making institutional
student success (DDDM ISS). With this block, there was another large increase in the
variance being explained for the dependent variable, 38.9 percent, an increase of 29
percent from Block 2 and an overall increase of 39.5 percent. This is very good,
considering Block 1 started with -.006 percent of variance explained. The amount of
significant variables doubled from two to four, as the variables from Block 2 remained
significant. Q10 (highest degree earned) (B=-.174) continued to have a negative impact
on the predictability of the dependent variable, demonstrating significance with a p=.015
and an alpha value =.05. Collaboration (B=.353) continued to have a positive impact on
the predictability of the dependent variable. It was significant with a p=.005 and an alpha
value =.05. The two new variables added in Block 3, data-driven decision making culture
(DDDM Culture) and data-driven decision making institutional student success (DDDM
ISS), were both significant in predicting the dependent variable. Data-driven decision
making culture (B=.39) had a positive impact on predicting the dependent variable. It was
significant with a p=.000 and an alpha value =.05. Data-driven decision making (B=.358)
has a positive impact on predicting the dependent variable. It was significant with a
p=.000 and an alpha value =.05.
Multiple regression was utilized to determine if the nine independent variables selected predicted the selected dependent variable, student success. In order to answer the fourth research question of the study: “To what extent do data-driven decision making culture, data-driven decision making institutional student success, collaboration, community college advocacy predict the level of data usage in promoting student success?” a null hypothesis was proposed for each predictor variable selected: “There is no statistically significant relationship between data-driven decision making culture and student success. There is no statistically significant relationship between data-driven decision making institutional student success and student success. There is no statistically significant relationship between collaboration and student success. There is no statistically significant relationship between community college advocacy and student success.”

The findings of the multiple regression analysis suggest that the null hypothesis was rejected for a majority of the selected predictor variables. The findings in chapter four indicated that Q10 (what is your highest degree) (B=-.174), Collaboration (B=.353), Data-driven decision making culture (B=.39), and Data-driven decision making (B=.358) were statistically significant factors on student success. Overall, adjusted R-square for the full model was .389, which means 38.9 percent of variation of student success was explained by the full model.

The findings of the multiple regression for the dependent variable for student success indicated that there is a statistically significant relationship between student data driven decision-making culture and student success. This resulted in the rejection of the 3a null hypothesis (H₀³a).
The findings of the multiple regression for the dependent variable for student success indicated that there is a statistically significant relationship between student data-driven decision-making institutional student success and student success. This resulted in the rejection of the 3b null hypothesis ($H_{0}^{3b}$).

The findings of the multiple regression for the dependent variable for student success indicated that there is a statistically significant relationship between collaboration and student success. This resulted in the rejection of the 3c null hypothesis ($H_{0}^{3c}$).

The findings of the multiple regression for the dependent variable for student success indicated that there is no statistically significant relationship between community college advocacy and student success. This resulted in the retention of the 3d null hypothesis ($H_{0}^{3d}$). This was surprising, since policies do impact student success, but since this study focused on data driven decision-making factors towards student success, this may have impacted the significance of this factor. It is noted that in studies conducted both by Rabey (2011) and Duree (2007) involving the AACC Community College Leadership Competencies, results from the multiple regression models also found community college advocacy to not be statistically significant in relation to their dependent variables.

**Summary of findings**

This chapter presents descriptive, between groups, construct measurement, and prediction analyses of all Iowa community college leaders in the CCDL dataset, comprised of administrators and non-administrators in the 15 Iowa community college districts. The analyses utilized included frequency, exploratory factor analysis,
independent samples t-test, Pearson chi square and multiple regression analysis. All data analyses were conducted using IBM Statistical SPSS 23.0 software.

The findings of the data were presented in four sections, with each section answering one of the four research questions that guided this study. The first section presented the results of the demographic descriptive statistics for each of the three groups of Iowa community college leaders: (a) all Iowa community college leaders (every leader that responded to the CCDL survey), (b) administrators (all leaders who responded that administration best fit their job description), (c) non-administrators (all leaders who responded that faculty or professional staff best fit their job description). It should be noted that there were zero responses for any Iowa community college leader that responded identifying as Hispanic of any origin. There was also only one Iowa community college leader that identified as Asian. There were eight Iowa community college leaders who identified as African American. With the predicted changes and growth in non-white demographics, this could be a potential future problem to address for the 15 Iowa community college districts.

The second section included the findings of the exploratory factor analysis. The exploratory factor analysis produced five constructs (Collaboration, Community College Advocacy, Student Success, Data-Driven Decision Making Culture, and Data-Driven Decision Making Institutional Student Success) of influences for data-driven decision making for student success. These five constructs included 27 variables associated with data driven decision-making for student success. The five constructs were tested for reliability using Cronbach’s alpha as a means of measurement, with a score of .7 or above
being a reliable construct. All 27 variables were utilized in the constructs moving forward for further analyses.

The third section reported the findings of the between-groups analysis for the five independent variables: collaboration, community college advocacy, student success, data-driven decision making culture, and data-driven decision making institutional student success. The comparative analysis was conducted for both dependent variables: administrators and non-administrators. The comparative analysis indicated that statistically significant differences existed between administrators and non-administrators on the construct for data-driven decision making culture. The independent samples t-test revealed this statistically significant difference.

There was also a comparative analysis for both dependent variables: administrators and non-administrators to see if there were any statistically significant differences that existed between the demographics of the two groups. For the demographics Q6-Number of years in your current position, Q7-Age, and Q10-What is your highest degree earned, an independent sample t-test was conducted for these variables. This independent sample t-test showed there is statistically significant differences for the means of Q6-Number of years in your current position and Q10-What is your highest degree earned between administrators and non-administrators. The independent sample t-test show that Q7-Age was not statistically significant.

Pearson chi-square analyses were conducted on the two remaining demographic questions Q8-Gender and Q9-Race/Ethnicity due to being categorical variables. This analysis proved that Q8-Gender was statistically significant and that Q9-Race/Ethnicity was not statistically significant.
The fourth section presented the results for the multiple regression analysis for the dependent variable student success. Demographic variables and the four of the five new constructs, collaboration, community college advocacy, data-driven decision making culture, and data-driven decision making institutional student success, were entered into sequential multiple regression analysis in three blocks. Variables that were significant at the p<.05 level and found to be significant predictors of student success were: Q10 (highest degree earned) (B=-.174), Collaboration (B=.353), Data-driven decision making culture (B=.39), and Data-driven decision making institutional student success (B=.358).

There were some surprises from the findings, in the multiple regression model, the highest degree earned was significant but it had a negative impact towards student’s success. I was surprised that community college advocacy was not statistically significant towards student success, because I know policy greatly impacts student success outcomes.

An in-depth examination of the implications for policy and future research and overall conclusions from the findings are discussed in the next chapter.
CHAPTER 5. DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

Introduction

If community college leaders are going to keep America in its current global leader role, they have to become committed to data-driven decision making and make informed decisions to help students to be successful and improve the completion rates of students across the country. President Obama, the Department of Education and several other stakeholders have identified the importance of why community colleges have to be successful at educating and training their students during these critical times for America’s future.

The 15 Iowa community college districts have committed to improving the student success outcomes in their respective districts. They have all recently started to report on the Voluntary Framework Accountability (VFA) system and are committed to utilizing data to improve their outcomes. The middle skills gap for labor industries and achievement gap in education is not going to disappear overnight. Iowa community college leaders are responding to the call of accountability and improved successes for the students enrolled in their respective district. The need to “build a culture of evidence” (Jenkins and Kerrigan, 2008) to improve student success requires an institutional call to action. The variables identified in this study further support the model for institutional action from a lens of data driven decision-making being the institutional commitment after institutional leadership in the model.

Equity in student completions is vital to being able to overcome this predicted skill gaps as traditionally underrepresented populations utilize community colleges at their access points to post-secondary education but enrollment vs completions are not
equal. The 21st century community college leader has to be prepared and ready to utilize
data analytics to improve student outcomes or the direction of Americas’ future could be
greatly impacted.

A review of literature that pertains to 1) an examination of data driven decision-
making in post-secondary education; 2) an analysis of the research methodology,
including the Community College Leader Competencies of the American Association of
Community Colleges 21st Century Initiative; 3) an examination of student success at
community colleges and impacts of equity and opportunity for the future of America; led
to the development of four research questions that guided this study:

1. What are the demographics and background characteristics among community
college leaders (gender, education level, age, and years of experience) who make
the decisions towards student success?

2. Is there any inter-relationship among variables that determine community college
leaders’ use of data for decision making around student success?

3. Are there statistically significant differences in data driven decision-making
culture, data driven decision-making institutional student success, collaboration,
community college advocacy between administrators and non-administrators in
regards to student success?

4. Is there a difference between administrators and non-administrators based on their
demographic characteristics?

5. To what extent do data driven decision-making culture, data driven decision-
making institutional student success, collaboration, community college advocacy
predict the level of data usage in promoting student success?
This chapter will offer strategies to help the 15 Iowa community college district leaders to continue towards their goals data driven decision-making to improve student success. This chapter also includes recommendations for policy and practice as well as suggestions for future research and closes with conclusions of the study.

**Discussion of results**

The results of the study from the data analysis provide us with the data necessary to review the literature presented in Chapter 2. In the review of the literature from Chapter 2, we reviewed 1) data-driven decision making in post-secondary education, 2) the research methodology, including the Community College Leader Competencies of the American Association of Community Colleges 21st Century Initiative, and 3) student success at community colleges and its impact on equity and opportunity for the future of America.

In regards to data-driven decision making in post-secondary education, a transition has occurred in which data are used to stimulate continuous improvement. The expectations are that schools monitor their efforts to enable all students to achieve, assume that school leaders and teachers are ready and able to use data to understand where students are academically and why, and to establish improvement plans that are targeted, responsive, and flexible (Mitchell, Lee & Herman, 2000. P.22). The results supported this as some of the keys to student success were having a clear definition of what student success was as a college, and the culture was in support of using the data.

There is an underlying assumption that educational data use will not only inform decision but it will enhance practice. It will be able to change practices that will then lead to improvements in achievement or improved student performance (Feldman & Tung,
“Building a culture of evidence” to improve student success requires fundamental changes in the way that faculty, administrators, and support services staff use student data in decision making (Jenkins & Kerrigan, 2008). The results from the data supported having this data-driven decision making culture. It was statistically significant in several of the analysis results. Data-driven decision making in two variations were proven to be statistically significant predictors of student success from the multiple regression analysis.

The EDUCAUSE study also showed that respondents felt that it was necessary for different departments to collaborate in order for data-driven decision making to be successful (Bischel, 2012). The results from the data supported this as collaboration was proven to be a statistically significant predictor of student success. The literature also supports this as collaboration is one of the five AACC *Community College Leadership Competencies*, 2nd Edition (AACC, 2013).

Next we will discuss the research framework of the Model for Institutional Action (Tinto and Pusser, 2006) and the AACC *Community College Leadership Competencies*, 2nd Edition (AACC, 2013) in connection with the results. The Model for Institutional Action is a step towards translating knowledge to actionable approaches on college campuses towards retention and student success (Tinto & Pusser, 2006). It holds institutions accountable and deviates from previous student success theories simply focused on student input and student effort (Tinto & Pusser, 2006). The model was still figured to be an indirect set of actions from college administrators that leads to student success, through actions that influence behaviors of faculty and staff whose actions directly impinge upon student’s lives either directly, through their own contact with
students, or indirectly, through programs that affect students (Tinto & Pusser, 2006). When I looked at the model I felt it encompassed all of the things necessary to move the needle around student success but needed the added element of data-driven decision making inserted into the model. It was a natural fit to me to become the Institutional Commitment of the model which would help to create the needed culture for the data-driven decision making to take hold and improve the model where my review of the literature suggests that is weak at in tracking its own flow. It then flows right into the fact you have the overall Expectational Climate which would be the expectation of data-driven decision making be the climate which would in turn lead to the improved students success with this being the lead factor of the model. The results supported this thought as data-driven decision making culture and data-driven decision making institutional student success were both statistically significant predictors of student success from the multiple regression model.

The second part of this framework I utilized in this study was the AACC Community College Leadership Competencies, 2nd Edition (AACC, 2013). Specifically, we looked at how collaboration and community college advocacy of these leadership competencies influenced the data-driven decision making for student success. The results of the study supported that the competencies may have some influence in data-driven decision making for students’ success. The results from the exploratory factor analysis (EFA) showed that collaboration and community college advocacy were very reliable constructs that were extracted from the analyses. Collaboration was proven to be a statistically significant predictor of student success from the multiple regression model. Although community college advocacy did not prove to statistically significant in the
analyses the literature still shows it does have impact in student success and was still a very reliable construct that could be used in the future.

Student success is critical to how the country operates in the near future. With the middle skills gap becoming a reality more and more each year, the need for improvement around student success is here and now. The student success construct was selected to represent students’ success because it represented questions that provided insight into how administrators perceived the use of data to inform policies and practices related to student success. The results from the multiple regression model showed that certain factors can help to predict the data usage needed to help improve student success, and the need for data-driven decision making to be a part of the process is very prevalent. These factors were able to predict 38.9% of the model needed to help improve the data usage to inform these policies and practices at the administrators’ respective institutions that impact student success. The need for it to be an institutional action is one that must be met, and community colleges need to revisit their current missions, ensure they are in alignment as institutions to utilize data-driven decision making for student success, and have a clear definition institutionally of what this student success is exactly.

**Implications for policy and practice**

The findings in this current study provide important findings for community college leaders, policy makers, organizations working to address the future middle skills gaps and those working to close the opportunity gap. The push for more accountability and the number one priority for states across the country are improving student outcomes, is forcing community colleges to rethink what they have been successful doing for so many decades of just providing access to students for post-secondary opportunities. They
must now be focused on the student success even more than access. The research shows the need for people to have some college by 2025 for the huge influx in middle skill job opportunities.

The state of Iowa recently just launched its Future Ready Iowa Alliance with the goal of 70% of Iowans will have education or training beyond high school by 2025 (Iowa Workforce Department (IWD), 2016). Millennials currently represent the largest share of Iowa’s workforce at 38% (IWD, 2016). With over 270,000 baby boomers in the current workforce between the ages 55 to 64, the need to improve student success becomes even more critical (IWD, 2016). Latino residents of Iowa between the ages of 25-64 currently represent 18% of degree attainment for the State of Iowa (Lumina, 2016). Latino residents of Iowa between the ages of 18-54 represent 11.1% of college enrollment for the State of Iowa (Lumina, 2016).

Data driven decision-making is going to be critical in ensuring that as states like Iowa and others move to achieve these audacious goals of upskilling so many individuals around the country, they will need to be able to track and identify the things that are working well and not in order to truly be able to achieve the goals. They have to better understand where investing resources are counting and cannot afford even a wasted year of focusing on things that are not producing evidence based results.

After analyzing the results, the first practice recommendation this study makes is for community colleges leaders to create and implement intentional strategies at improving students of color success at their respective institutions. With this being one of the fastest growing segments of enrollment and one of the larger pool of potential students to pull from, they need to let people of color know they are wanted and will be
successful at their respective community colleges. With these segments growing at 3.4% a year in Iowa and even more growth anticipated growth in different ethnic groups of color, Iowa community college leaders need to figure out short-term and long-term solutions for these students. My immediate advice for community college leaders is to look at the different provisions they can offer to their students through collaborations with local community based organizations in their area. This will allow community colleges to offer supports and access to resources that are outside of the scope for community colleges. I have always said, “community college students are one flat tire away from disappearing and never returning to the college”. Community college leaders have to move past the traditional education thinking that has been the norm for the past few decades of what education looks like and adapt to what the reality of education is today, especially for students of color.

The second practice recommendation this study makes is for community colleges leaders to keep working on building a consistent data driven decision-making culture for all 15 Iowa community college districts to agree upon and continue to build on that to ensure all of the across the state are moving in the right direction and producing the outcomes of success they are all dedicated to. Community college leaders should continue to collaborate. Build on the relationships they have fostered with recent state wide awards for federal grants and other funding opportunities by sharing data and keeping each other informed across the state. The Iowa community colleges uploading their data on the Voluntary Framework Accountability (VFA) system, was a great sign that Iowa community leaders are serious about committing to utilizing data to track
student success. It also shows the rest of country Iowa is not nervous or scared of being held accountable on a national level.

The third practice recommendation, with the changing landscape of Iowa’s demographics and other services areas within the 15 Iowa community college districts, Iowa community college leaders should strongly consider diversifying its leadership in the future as the current configuration of leadership careers wind down and many move into retirement. The lack of diversity in Iowa community college leaders was evident in the responses to Q9-Race/Ethnicity. Of the 214 responses to this question, only 14 of the Iowa community college leaders identified as non-white leaders. There were zero leaders who identified as Hispanic of any origin. This is alarming considering by 2025, Latinos are projected to be the largest minority in the State of Iowa. Current Iowa community college leaders should also consider pathways for current faculty, staff and administrators of color into leadership positions in the college. Diversifying from their own internal talent pool will help with continuity of the current data-driven decision-making culture building that is currently happening in their respective colleges.

The fourth practice recommendation, is that the Iowa community college leaders review and begin to implement or confirm the existence of the results found in this current study. This current study was able to find some strong predictor variables towards student success. Community college leaders should ensure the college is moving in a direction that a data-driven decision making culture is being established for all of the college and all levels of community colleges leaders, faculty, and professional staff are in alignment with this data-driven decision making culture. The results of the study showed that there was statistically significant in the differences of the means for administrators
and non-administrators. It becomes important that from the executive leadership down to every level involved in student interactions and decision making understands the vision of the executive leadership in regards to utilization of data-driven decision making for student success. I have witnessed personally how easy a disconnect can happen from what the executive team of community college leaders can be thinking and feel like is happening with the college but as you move down levels, the clarity of this vision and action steps gets lost in translation.

**Recommendations for future research**

In this study, the 15 Iowa community college district leaders were investigated. Further studies are needed with larger samples of community college leaders to see if the findings are indicative of all community college leaders across the country. Larger sample size might also increase diversity of the participant, allowing for comparisons along demographic characteristics. Further, given the close relationship between community colleges and local contexts, an increase sample size may allow for more sophisticated statistical analysis, such as hierarchical linear modeling, to consider variance of outcomes at multiple levels – local, state, and national.

Further research could be conducted from a qualitative methodology to expand upon the quantitative findings of this study. This could include interviews with Iowa community college leaders. The interviews could even be broken down into the leaders who identified as administrators and non-administrators.

Further studies are needed around data-driven decision making and the Model for Institutional Action. Inserting data-driven decision making into the Model for Institutional Action can occur in different ways. It could be inserted in the Institutional
Commitment component of the model. It could also be inserted in the Expectational Climate component as another option. Future researchers could also do both at the same time or look at the impacts of data-driven decision making on other components of the Model for Institutional Action.

In this study, *Q10 What is your highest degree earned?*, was identified as a negative statistically significant predictor of student success construct, which represented the variables around the perceived data usage around factors that led to student success. Further research should be considered on this topic to further investigate the negative impacts on the perceived uses of data that impact factors around student success based on community colleges leaderships different levels of education. Future research of how the culture of the institutions could be impacted by this negative predictor.

Further research could be conducted on the American Association of Community Colleges Community College Leadership Competencies, 2nd Edition and 21st Century Initiative recommendations. The results from this study was able to show that the selected competencies of collaboration and community college advocacy constructs were reliable and could be utilized in other studies and research. Future research could analyze the other leadership competencies to see if they are statistically significant in predicting or improving the perceived levels of data usage around factors that impact student success.

Future research around data-driven decision making and the impact of the Voluntary Framework Accountability (VFA) system could be analyzed to see if there is any relationship with the colleges who select to report on the system. Future research could also be conducted around those colleges who do not report on the VFA system and the cultures of data-driven decision making at those institutions.
Conclusion

The purpose of this study was threefold. First, this study was conducted to ascertain the level of data literacy, data-driven decision making, culture, collaboration and advocacy among the leaders at the 15 Iowa community college districts and how these factors guide data-driven decision making influencing student success. Second, the researcher hoped to highlight any differences in the data-driven decision making culture, advocacy, and collaboration of administrators and non-administrators. Third, the study sought to add to the current body of literature on data-driven decision making, specifically as it pertains to the American Association of Community Colleges 21st Century Community College Leadership Competencies and recommendations for community college reform. The goal of the research is to inform policy by providing relevant information on the influence of culture, collaboration, and advocacy towards student success at the community college level.

The findings of this study added to the research literature on influencing factors of data-driven decision making for students’ success at community colleges at the 15 Iowa community college districts. By understanding the level of data literacy, data-driven decision making, culture, collaboration and advocacy among the leaders at the 15 Iowa community college districts and how these factors guide data-driven decision making influencing student success, current community college leaders, policy makers, organizations focusing on the middle skills gap, and the opportunity gap can make better decisions when deciding what factors to track for data-driven decision making influencing student success.
The findings of this study in regards to the American Association of Community Colleges’ 21st-Century Initiative and Model for Institutional Action added additional literature for additional research around these topics. Collaboration was proven to be a statistically significant predictor of the data usage of certain factors that lead to student success. Collaboration and Community College Advocacy both proved to be reliable constructs through the exploratory factor analysis.

Data-driven decision making would be a natural fit into the Model for Institutional Action. Data-driven decision making would be the Institutional Commitment part of the model, and then the data-driven decision making culture would be the Expectational Climate needed to execute the Model for Institutional Action. This would help to reduce some of the weakness around the model and would enable tracking and identification of what is actually working for institutional student success.

Data-driven decision making is not new to education but still fairly young on level of scale across the country for community college leaders. The predictor variables tested in this study provides new factors to consider when community college leaders are setting the direction of data-driven decision making and culture to influence student success.

In this new era of education, community colleges have to focus on student success vs the traditional access focus for so many decades. In order for them to accomplish they have to consider what they are providing to students to be successful at their respective colleges. Collaboration will be key for community college leaders to be successful in being able to provide the resources needed for the 21st Century student to be successful
today and tomorrow, as the good ole days of education’s traditional model begin to phase out and become ancient history such as the dinosaurs before them did.

This recent election cycle has created a sense of angst among Iowa community college leaders across the state. Iowa community college leaders can only hope that recent progressive funding from the State of Iowa into Adult Basic Education and ELL will not take steps backwards. As a country, we are facing the middle skills gap, but in Iowa we will be even more challenged by the geography, weather, and demographics of the state to recruit people to the state.

The current political leaders must not revert back to business as usual with cutting funds into education; the time is too critical to cut the very things we need for survival as a state. Between 2008 and 2018, 7 out of the 10 fastest growing occupations in Iowa between require postsecondary education (IACCT, 2012b). Nearly 84% of Iowa’s Community College students remain in Iowa upon program completion, contributing to the State economy (IACCT, 2012b). Every $1 of Iowa Community College spending creates an estimated $1.47 for the state’s economy (IACCT, 2012b). Iowa community colleges upskilled 98,000 Iowans in 2015 (IWD, 2016). Iowa community colleges will be vital if the state truly wants to achieve its goal of having 70% of all Iowans receiving education and training beyond high school by 2025. If the current political leaders go back to cutting and defunding community colleges, they will in essence be imploding the stable state economy that Iowa has enjoyed even during the most recent recession.

Mike Ralston, President of the Iowa Association of Business and Industry (ABI), feels that the 1,500 state-wide members of the ABI have exceptionally strong ties to their area community colleges (IWD, 2016). ABI knows that their community colleges are the
best resource for the skilled workforce they need and the skilled upgrades that progress demands (IWD, 2016). This is another fact that shows Iowa community colleges must not only be able to stay the course but need even more investment and resources from the State of Iowa to ensure 2025 meets the level of expectations and quality of life Iowans have come to expect of their state.

Iowa community colleges are helping the unemployed and underemployed maintain and improve their quality of life. Iowa community colleges engage displaced workers through Rapid Response Teams that provide career and training options in high-demand, high-skill, STEM occupations (IWD, 2016). Iowa community colleges partner with area education agencies and K-12 school districts and are helping with the implementation of HF2392: Secondary Career & Technical Education Redesign and establishing the regional planning partnerships (IWD, 2016). Iowa community colleges are constantly working with K-12 school districts to expand dual credit programming options (IWD, 2016). This only helps to reduce the current average of 12 years it takes students in some counties across Iowa to complete high school and a certificate or associates degree. If there was ever a time community colleges were needed, the time is now, and we must continue to support these post-secondary institutions in order to help keep Iowa an economic leader across the country.
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APPENDIX A: PILOT SURVEY

DDDM DMACC pilot survey

Q1 Survey of Community College Data Driven Decision Making
Fall 2015
Thank you for participating in the Survey of Community College Data Driven Decision Making (DDDM). This survey was developed by a research team in the Community College Leadership Program in the School of Education at Iowa State University. Using the 2012 and 2015 EDUCAUSE Analytics Survey, the Learning Analytics Readiness Instrument (LARI), and the President’s Survey Tool, the constructs of the research that this newly developed instrument are vetted in is the 2nd Edition of the American Association of Community Colleges (AACC) Competencies for Community College Leaders. These constructs include organizational strategy, institutional finance, research, fundraising, and resource management, communication, collaboration, and community college advocacy. The researchers will use these constructs as a guide to examine data analytics and data driven decision making level at the community college. Specifically, we will take a look at how data usage is affected by leadership and how it affects infrastructure and student outcomes.

There are four sections in this survey. Please read the instructions in each of these sections and respond to questions carefully. We estimate it will take approximately 10-15 minutes to complete the survey.

Please note that your personal identifiers (e.g., names, emails, etc.) will be kept confidential. Your responses will not be provided to anyone in your college. Your answers will be analyzed as part of an aggregated data set.

The DDDM Research Team Marvin DeJear, Brett Monaghan, Matt Schmit Doctoral Students School of Education Iowa State University
Q2 SECTION 1 - Data Driven Decision Making
How would you rate your personal involvement with Data Driven Decision Making (DDDM) effort/discussion at your institution?

- Not at all (1)
- Interested, but not involved (2)
- Somewhat involved (3)
- Highly involved (4)
- Leading the conversation (5)

Q3 Select the response that best describes the degree of involvement that each of the following positions have at your institution in regards to the use of DDDM.

<table>
<thead>
<tr>
<th>Position</th>
<th>Not currently involved in analytics (1)</th>
<th>Support/Contributor Role (2)</th>
<th>Leadership/Sponsor Role (3)</th>
<th>Don't know (4)</th>
<th>Don't have this position (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>President/Chancellor (1)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Chief Academic Officer or Provost (2)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Chief Learning Officer or Equivalent (3)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Student Success Leader (4)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Chief Information Officer or Equivalent (5)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Chief Data Officer or Equivalent (6)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Director of Institutional Research (7)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Chief Analytics Officer or Equivalent (8)</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Chief Financial Officer or Chief Business Officer (9)</td>
<td>o</td>
<td>o</td>
<td>o</td>
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</tr>
</tbody>
</table>
Q4 Does your institution have a dedicated individual that leads DDDM efforts?
○ Yes (1)
○ No (2)

Q5 What priority does your institution place on the use of DDDM?
○ Major institutional priority (1)
○ Major priority for some departments, units, or programs but not for the entire institution (2)
○ An interest of the institution but not a priority (3)
○ Intentionally not a priority or interest (4)
○ Little awareness, and therefore not a priority of interest (5)
○ Don’t know (6)
Q6 Indicate which response best describes the use of DDDM in each of the following areas at your institution.
<table>
<thead>
<tr>
<th>No discussion to date (1)</th>
<th>Considered, not pursued (2)</th>
<th>Experimenting or Considering (3)</th>
<th>In planning (4)</th>
<th>Used sparsely (5)</th>
<th>Used broadly (6)</th>
<th>Don’t know (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student learning (real-time or on-demand assessment and feedback) (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Student learning (learning outcomes, course completion) (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Faculty teaching performance (18)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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<tr>
<td>Faculty promotion (19)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Student degree planning (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Student degree progress (retention, graduation, etc) (4)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Enrollment management, admissions, and recruiting (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Cost to complete a degree (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Time to complete a degree (7)</td>
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<td>○</td>
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<td>4</td>
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<td>6</td>
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<tr>
<td>Instructional management (which courses need to be offered, number of sections, staffing needs)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>Progress of institutional strategic plan</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>Central IT (12)</td>
<td>☒</td>
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<tr>
<td>Facilities (13)</td>
<td>☒</td>
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<tr>
<td>Finance and budgeting (14)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>Human Resources (16)</td>
<td>☒</td>
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<tr>
<td>State/federal accreditation reporting (20)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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</tbody>
</table>
Q7 Could your institution benefit from the use of DDDM
   ☑ Yes (1)
   ☐ No (2)
Q8 To what extent do you see the following as concerns about the use of data in higher education?
<table>
<thead>
<tr>
<th>Concern</th>
<th>Not a concern (1)</th>
<th>Minor concern (2)</th>
<th>Moderate concern (3)</th>
<th>Major concern (4)</th>
<th>Don't know (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The data used for DDDM aren’t always accurate</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>The data will be misused; wrong conclusions will be drawn</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<td>☒</td>
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<tr>
<td>Student privacy rights will be breached</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>Faculty privacy rights will be breached</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Staff privacy rights will be breached</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>Government regulations will be imposed, requiring more reporting on</td>
<td>☒</td>
<td>☒</td>
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<td>performance metrics</td>
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<tr>
<td>Government regulations will be imposed, requiring questionable/flawed</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
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<tr>
<td>performance metrics</td>
<td></td>
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</tr>
<tr>
<td>Institutions won’t be able to afford to construct effective DDDM</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>strategies</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>There will not be a sufficient return on investment; the money would</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>be better spent elsewhere</td>
<td></td>
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</tr>
<tr>
<td>The higher education community doesn’t know how to use data to make</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>decisions</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>This is another means of running higher education like a business, and</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>that’s the wrong model for higher education</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Q9 Why, in your opinion, is your institution thinking about implementing DDDM? (check all that apply)

- Overall student achievement/success (1)
- Overall student retention (2)
- Overall student time to degree (3)
- Underrepresented minority student achievement/success (4)
- Underrepresented minority student retention (5)
- Underrepresented minority student time to degree (6)
- First year student achievement/success (7)
- First year student retention (8)
- Gender imbalance(s) (9)
- Course scheduling and delivery (10)
- Improving developmental education (11)
- Improving teaching (12)
- Collecting institutional data (13)
- Sharing institutional data (14)
- Identifying “students at risk” of academic failure (15)
- Increase internal collaborative efforts (16)
- Increase communication with external stakeholders (17)
Q10 Governance/Infrastructure
Please rate your agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My institution views the use of data as a long term investment, rather than a short term expense (1)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>My institution has measurable objectives that will indicate if success has been achieved (4)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>My institution has developed interventions to implement with appropriately identified students (5)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>My institution has well defined goals for the implementation of use of data (6)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>People from multiple offices across my institution are involved in the effort (8)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>My institution has the ability to store and manage increasingly large volumes of data (9)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>
Q11 The following questions ask about professionals with various skills and abilities. Please consider any individual employed by your institution (e.g. staff, faculty, etc) when answering these questions.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My institution has professionals who know how to use and apply data to their areas (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My institution has professionals who have specialized training in data-use (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My institution has a sufficient number of professionals who are able to provide support in the use of data (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My institutional researcher knows how to present data/reports in ways that are visually intuitive and easily understood (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My institution has professionals who train diverse constituents on the use of new and existing data systems (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q12 Data
For each source, please indicate to what extent your institution currently collects data:
<table>
<thead>
<tr>
<th>Category</th>
<th>Does not currently collect (1)</th>
<th>There is an expressed desire, but no plan yet (2)</th>
<th>There is a plan to begin collecting this data (3)</th>
<th>Some departments collect portions of this data (4)</th>
<th>My institution collects portions of this data (5)</th>
<th>Some departments collect all/nearly all of this data (6)</th>
<th>My institution collects all/nearly all of this data (7)</th>
<th>Don’t know (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Records (e.g., demographics, academic history, degree infoplacement exams, achievement tests) (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Admissions (e.g., prospect demographics, interests, application data application evaluation, orientation data, high school/transfer information) (2)</td>
<td>✗</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>Facilities (e.g., card swipes for access, food service usage, gym/recreational facility usage) (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Financial Aid (e.g., FAFSA data, scholarship award applied/accepted, dependency status, work study award) (4)</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Housing (e.g., application data, roommate matching, preferences, placement, renewal) (5)</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Human Resources (e.g., employment history, FTE, student employment and internships) (6)</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>Source Description</td>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
<td>Column 5</td>
<td>Column 6</td>
<td>Column 7</td>
<td>Column 8</td>
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<tr>
<td>Alumni/Development (e.g., membership, contribution history, employment data,</td>
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<td>transfer data, relocation information) (7)</td>
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<tr>
<td>Library (e.g., circulation, electronic text access, help requests, workshop</td>
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<td>attendance, computer usage) (8)</td>
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<tr>
<td>National Institutional Surveys (e.g., CCSSE) (9)</td>
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<td>College Internal Surveys (e.g., orientation, program specific, course-specific,</td>
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<td>exploratory, IT use/satisfaction) (10)</td>
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<tr>
<td>Learning/Management System/Course Management System (e.g., user log data,</td>
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<td>assignment grades) (11)</td>
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<tr>
<td>File Servers/Cloud Files Space (e.g., user log data) (12)</td>
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</table>
Q13 At my institution:

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (4)</th>
<th>Agree (5)</th>
<th>Strongly Agree (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional reports routinely inform institutional decisions (1)</td>
<td>•</td>
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<tr>
<td>There is an established routine process for eliminating or phasing out unused institutional reports (2)</td>
<td>•</td>
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<tr>
<td>Persons attempting to replicate reports/data can do so regularly (3)</td>
<td>•</td>
<td>•</td>
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<td>•</td>
</tr>
<tr>
<td>Institutional reports routinely inform departmental decisions (4)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Institutional reports routinely contain trustworthy data (5)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>There are routine scripts/processes for refreshing/updating institutional reports (6)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>
### Q14 Culture and Process

Please rate your agreement with the following statements regarding conversations about data, decision making, and student success on your campus:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My institution is ready to put resources behind the research necessary to implement DDDM (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My institution’s administrators generally accept the use of data for decision making (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My institution has had conversations regarding the sustainability of DDDM effort (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My institution has a clear vision of where it can make changes to help students be more successful academically (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My institution has a culture that accepts the use of data to make decisions (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My institution’s faculty largely accept the use of DDDM for improving teaching and learning (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My institution has shared the definition of “student success” with faculty, staff, and students alike (10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q15 Provide your best estimate of how data are being used in various functional areas of your institution. Select all that apply:

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>We do not collect usable data (1)</th>
<th>Data are collected but are never or rarely used (2)</th>
<th>We create and use analyses or reports to monitor operations or programs (3)</th>
<th>We create and use analyses or reports to make projections for programs or groups (4)</th>
<th>We create and use predictive analyses or reports that may trigger proactive responses (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Learning (real-time or on-demand assessment and feedback) (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Student Learning (learning outcomes, course completion) (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Student Degree Planning (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Student Progress (retention, graduation, etc) (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Enrollment management, admissions, and recruiting (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cost to complete degree (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q16 At my institution, I would describe the communication about data (either raw data or in report form) as:

- Highly decentralized: Data/reports shared in small groups within departments and selected individuals available with permission (1)
- Most decentralized: Data/reports shared within departments and selected individuals available if you know who to ask (2)
- Level: Nearly all data/reports shared across the institution and broadly available (3)
- Mostly centralized: Data/reports controlled by central administration or IT, but most made broadly available (4)
- Highly centralized: Data/reports controlled by central administration or IT available at their discretion (5)
Q17 SECTION 2 – Leadership Development  In what ways have you engaged in external programs that have contributed to the development of your DDDM competencies in your current position? (check all that apply)
- Conference attendance (1)
- Commercialized training (2)
- Academic training (3)
- Professional organizations (4)
- Webinars/online (5)

Q18 In what ways have you participated in internal programs that have contributed to the development of your DDDM competencies in your current position?
- Departmental (1)
- Campus-wide (2)
- District level (3)

Q19 Who has influenced your DDDM skills the most?
- A supervisor (1)
- Co-workers (2)
- External constituents/partners (3)
- Professional relationships (4)
- Academic advisor/mentor (5)
- Academic peers (6)

Q20 If your community college sponsors or participates in an internal leadership development program, who are the targeted participants in the program? (check all that apply)
- Top administration (presidents, vice-presidents, and deans) (1)
- Mid-level academic managers (department chairs) (2)
- Mid-level managers or directors (3)
- Faculty (4)
Q21 In your role as a community college leader, on average, how often do you meet each month or discuss DDDM with each of the following?

<table>
<thead>
<tr>
<th>Group</th>
<th>0 (1)</th>
<th>1 (12)</th>
<th>2 (2)</th>
<th>3 (3)</th>
<th>4 (4)</th>
<th>5+ (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinet level administrators (1)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Faculty (2)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Other college staff (3)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Students (4)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>College board members (5)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Other community college leaders (6)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Other education officials (7)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Business/industry officials (8)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Local, state or national elected officials (9)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Q22 Select the top three areas that utilize DDDM in your institution:

<table>
<thead>
<tr>
<th>Area (1)</th>
<th>Academic issues (1)</th>
<th>Accountability (2)</th>
<th>Athletics (3)</th>
<th>Budget/financial management (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Area (1)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Second Area (2)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Third Area (3)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

- First Area: Academic issues (1), Accountability (2), Athletics (3)
- Second Area: Academic issues (1), Accountability (2), Athletics (3)
- Third Area: Academic issues (1), Accountability (2), Athletics (3)
<table>
<thead>
<tr>
<th>First Area (1)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk management (5)</td>
<td></td>
<td>Diversity (6)</td>
<td>Enrollment management (7)</td>
<td>Entrepreneurship (e.g., revenue generating activities) (8)</td>
</tr>
<tr>
<td>Second Area (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk management (5)</td>
<td></td>
<td>Diversity (6)</td>
<td>Enrollment management (7)</td>
<td>Entrepreneurship (e.g., revenue generating activities) (8)</td>
</tr>
<tr>
<td>Third Area (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk management (5)</td>
<td></td>
<td>Diversity (6)</td>
<td>Enrollment management (7)</td>
<td>Entrepreneurship (e.g., revenue generating activities) (8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Area (1)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundraising (9)</td>
<td></td>
<td>Governing board relations (10)</td>
<td>Personal issues (e.g., human resources) (11)</td>
<td>Public relations and marketing (12)</td>
</tr>
<tr>
<td>Second Area (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fundraising (9)</td>
<td></td>
<td>Governing board relations (10)</td>
<td>Personal issues (e.g., human resources) (11)</td>
<td>Public relations and marketing (12)</td>
</tr>
<tr>
<td>Third Area (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fundraising (9)</td>
<td></td>
<td>Governing board relations (10)</td>
<td>Personal issues (e.g., human resources) (11)</td>
<td>Public relations and marketing (12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Area (1)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic planning (13)</td>
<td></td>
<td>Workforce and economic development (14)</td>
<td>Student success (e.g., retention, completion, etc.) (15)</td>
<td>Performance-based funding (16)</td>
</tr>
<tr>
<td>Second Area (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic planning (13)</td>
<td></td>
<td>Workforce and economic development (14)</td>
<td>Student success (e.g., retention, completion, etc.) (15)</td>
<td>Performance-based funding (16)</td>
</tr>
<tr>
<td>Third Area (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic planning (13)</td>
<td></td>
<td>Workforce and economic development (14)</td>
<td>Student success (e.g., retention, completion, etc.) (15)</td>
<td>Performance-based funding (16)</td>
</tr>
</tbody>
</table>
Q23 Based on the following scale and definition of transformational leadership, rate yourself within the five characteristics in promoting DDDM:

**Transformational Leader:** The transformational leader must have or gain the ability to link change to a collective purpose that acknowledges needs, values, and goals of the group and at the same time, fully engages followers. The vision is shared by everyone throughout the organization and both the leader and followers work collaboratively to transform and create new culture.

<table>
<thead>
<tr>
<th></th>
<th>low (1)</th>
<th>medium low (2)</th>
<th>medium (3)</th>
<th>medium high (4)</th>
<th>high (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision:</strong> while shared by others, the vision is primary responsible for the transformational leader (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td><strong>Influence Orientation:</strong> the process of shared governance results in increased delegation, empowerment, and self-actualization of both leaders and followers (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td><strong>People Orientation:</strong> the process of leader and follower interaction where strengths of each team member are maximized and there exists a strong focus on the individual (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td><strong>Motivational Orientation:</strong> the process whereby followers are motivated to achieve and are excited through performance and results (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td><strong>Values Orientation:</strong> the process whereby a leader models ethical fiber of commitment, quality, integrity, trust, and respect. (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q24 SECTION 3 – AACC Leadership Competencies
The next questions addressed are the five competency domains for the community college leaders that have been developed and endorsed by the American Association of Community Colleges (AACC). For each component listed, please rate how well prepared you were coming into your first leadership position.

Organizational Strategy – An effective community college leader promotes the success of all students, strategically improves the quality of the institution, and sustains the community college mission based on knowledge of the organization, its environment, and future trends

<table>
<thead>
<tr>
<th>Component</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop, implement, and evaluate strategies to improve the quality of education at your institution (1)</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
</tr>
<tr>
<td>Use data-driven decision making practices to plan strategically (2)</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
</tr>
<tr>
<td>Use a systems perspective to assess and respond to the needs of Students and the community (3)</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
</tr>
<tr>
<td>Develop a positive environment that supports innovation, teamwork, and successful outcomes (4)</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
</tr>
<tr>
<td>Maintain and grow college personnel, fiscal resources, and assets (5)</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
</tr>
<tr>
<td>Align organizational mission, structures, and resources with the college master plan (6)</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
<td>📄</td>
</tr>
</tbody>
</table>
Q25 Institutional Finance, Research, Fundraising, and Resource Management
An effective community college leader equitably and ethically sustains people, processes, and information as well as physical and financial assets to fulfill the mission, vision, and goals of the community college.

<table>
<thead>
<tr>
<th>Ensure accountability in reporting (1)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support operational decisions by managing information resources (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Develop and manage resources consistent with the college master plan (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Take an entrepreneurial stance in seeking ethical alternative funding sources (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Implement financial strategies to support programs, services, staff and facilities (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Implement a human resources system that fosters the professional development and advancement of all staff (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Employ organizational, time management, planning, and delegation skills (7)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q26 Communication
An effective community college leader uses clear listening, speaking, and writing skills to engage in honest, open dialogue at all levels of the college and its surrounding community; promotes the success of all students; ensures the safety and security of students and the surrounding college community; and sustains the community college mission.

<table>
<thead>
<tr>
<th></th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulate and champion shared mission, vision, and values to internal and external audiences (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Disseminate and support policies and strategies (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Create and maintain open communication regarding resources, priorities, and expectations (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Effectively convey ideas and information to all constituents (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Listen actively to understand, analyze, engage, and act (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Project confidence and respond responsibly and tactfully (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
### Q27 Collaboration

An effective community college leader develops and maintains responsive, cooperative, mutually beneficial, and ethical internal and external relationships that nurture diversity, promotes the success of all students, and sustains the community college mission.

<table>
<thead>
<tr>
<th></th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embrace and employ the diversity of individuals, cultures, values, ideas, and communication styles (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Demonstrate cultural competence in a global society (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Involve students, faculty, staff, and community members to work for the common good (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Establish networks and partnerships to advance the mission of the community college (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Work effectively and diplomatically with legislators, board members, business leaders, accreditation organizations, and others (5)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Manage conflict and change by building and maintaining productive relationships (6)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Develop, enhance, and sustain teamwork and cooperation (7)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Facilitate shared problems solving and decision-making (8)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q28 Community College Advocacy
An effective community college leader understands, commits to, and advocates for the mission, vision, and goals of the community college on the local, state, and national level.

<table>
<thead>
<tr>
<th>Value and promote diversity, inclusion, equity, and Academic excellence (1)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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</table>

<table>
<thead>
<tr>
<th>Demonstrate commitment to the mission of community colleges and student success through the scholarship of teaching and learning (2)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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<thead>
<tr>
<th>Promote equity, open access, teaching, learning, and innovation as primary goals for college (3)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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<thead>
<tr>
<th>Advocate the community college mission to all constituents and empower them to do the same (4)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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<thead>
<tr>
<th>Advance lifelong learning and support a learning-centered environment (5)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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<tr>
<th>Represent the community college in a variety of settings as a model of higher education (6)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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</table>
Q29 SECTION 4 – Demographics
Which of the following most closely corresponds to your primary work responsibilities?
- Administration (1)
- Faculty (2)
- Professional Staff (3)

Answer If SECTION 1 – Demographics Which of the following most closely corresponds to your primary work responsibilities? Administration Is Selected
Q30 Administration
- Top Executive or Senior Institutional Officer (1)
- Academic Dean (2)
- Institutional Administrator (3)
- Head of Division, Department or Center (4)
- Academic Associate/Assistant Dean (5)
- Other (6)

Answer If SECTION 1 – Demographics Which of the following most closely corresponds to your primary work responsibilities? Faculty Is Selected
Q31 Faculty
- Teacher/Instructor (1)
- Other (2)

Answer If Which of the following most closely corresponds to your primary work responsibilities? Professional Staff Is Selected
Q32 Professional Staff
- Academic Affairs (Instruction, Library, Museums, etc) (1)
- Athletics (2)
- Extension Programs or Technology Transfer (3)
- Facilities (4)
- Fiscal Affairs (budget, purchasing, etc) (5)
- Health/Medical Services (6)
- Information Technology (7)
- Institutional Affairs (Human Resources, Institutional Research, etc) (8)
- Research (research scientists, lab coordination, etc) (9)
- Student Affairs (registrar, housing, counseling, etc) (10)
- Other (please specify) (11)
Q33 Number of years in your current position?
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
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- 25 (25)
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- 28 (28)
- 29 (29)
- 30+ (30)
Q34 Age
- 18 (18)
- 19 (19)
- 20 (20)
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- 58 (58)
155

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<th>Age Group</th>
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<td>68 (68)</td>
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<td>69 (69)</td>
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<tr>
<td>70+ (70)</td>
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</tbody>
</table>

Q35 Race/Ethnicity
- Non-resident alien (1)
- Race and ethnicity unknown (2)
- Hispanics of any race (3)
- American Indian or Alaskan Native (4)
- Asian (5)
- Black or African American (6)
- Native Hawaiian or Other Pacific Islander (7)
- White (8)
- 2 or more (9)

Q36 What was your previous position/job prior to your current position?
- Administration (1)
- Faculty (2)
- Professional Staff (3)

Answer If What was your previous position/job prior to your current position? Administration Is Selected

Q37 Which type of administration position/job did you have prior to your current position?
- Top Executive or Senior Institutional Officer (1)
- Academic Dean (2)
- Institutional Administrator (3)
- Head of Division, Department or Center (4)
- Academic Associate/Assistant Dean (5)
- Other, please specify (6) ____________________
Answer If What was your previous position/job prior to your current position? Faculty Is
Selected
Q38 What type of faculty position/job did you have prior to your current position?
☐ Teacher/Instructor (1)
☐ Other, please specify (2) ____________________

Answer If What was your previous position/job prior to your current position? Professional Staff
Is Selected
Q39 What type of professional staff position/job did you have prior to your current
position?
☐ Academic Affairs (Instruction, Library, Museums, etc) (1)
☐ Athletics (2)
☐ Extension Programs or Technology Transfer (3)
☐ Facilities (4)
☐ Fiscal Affairs (budget, purchasing, etc) (5)
☐ Health/Medical Services (6)
☐ Information Technology (7)
☐ Institutional Affairs (Human Resources, Institutional Research, etc) (8)
☐ Research (research scientists, lab coordination, etc) (9)
☐ Student Affairs (registrar, housing, counseling, etc) (10)
☐ Business Professional (11)
☐ Medical Professional (12)
☐ Other, please specify (13) ____________________
Q40 How many years did you hold your previous position/job?
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
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- 22 (22)
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- 28 (28)
- 29 (29)
- 30+ (30)

Q41 What is your highest degree earned?
- Associate of Arts/Associate of Applied Sciences (1)
- Bachelor’s (2)
- Master’s (3)
- Ed. Specialist (4)
- Ph.D. (5)
- Ed.D. (6)
- J.D. (7)
- Other, please specify (8) ____________________
Q43 What was your major field of study in your highest degree?
☐ Business Management/Administration (1)
☐ Communication (2)
☐ Computer and Information Sciences (3)
☐ Educational Research (4)
☐ Educational Administration (5)
☐ Teacher Education (6)
☐ Other Education (7)
☐ Engineering (8)
☐ Humanities (9)
☐ Agricultural Science (10)
☐ Natural Resources (11)
☐ Biological/Biomedical Sciences (12)
☐ Health Sciences (13)
☐ Law (14)
☐ Mathematics (15)
☐ Physical Sciences (16)
☐ Psychology (17)
☐ Social Sciences (18)
☐ Other. please specify (19) ____________________

Q44 May we contact you to obtain clarification or further insight into some of your responses?
☐ Yes (1)
☐ No (2)

Q45 Thank you for your time. We appreciate your assistance!
APPENDIX B: DDDM FINAL SURVEY

DDDM Survey

Q1 Survey of Community College Data Driven Decision Making
Summer 2016

Thank you for participating in the Survey of Community College Data Driven Decision Making (DDDM). This survey was developed by a research team in the Community College Leadership Program in the School of Education at Iowa State University. Using the 2012 and 2015 EDUCAUSE Analytics Survey, the Learning Analytics Readiness Instrument (LARI), and the President’s Survey Tool, the constructs of the research that this newly developed instrument are vetted in is the 2nd Edition of the American Association of Community Colleges (AACC) Competencies for Community College Leaders. These constructs include organizational strategy, institutional finance, research, fundraising, and resource management, communication, collaboration, and community college advocacy. The researchers will use these constructs as a guide to examine data analytics and data driven decision making level at the community college. Specifically, we will take a look at how data usage is affected by leadership and how it affects infrastructure and student outcomes.

There are four sections in this survey. Please read the instructions in each of these sections and respond to questions carefully. We estimate it will take approximately 10-15 minutes to complete the survey.

Please note that your personal identifiers (e.g., names, emails, etc.) will be kept confidential. Your responses will not be provided to anyone in your college. Your answers will be analyzed as part of an aggregated data set.

The DDDM Research Team Marvin Dejear, Brett Monaghan, Matt Schmit Doctoral Students School of Education Iowa State University
Q2 SECTION 1 – Demographics
Which of the following most closely corresponds to your primary work responsibilities?
- Administration (1)
- Faculty (2)
- Professional Staff (3)

Answer If SECTION 1 – Demographics Which of the following most closely corresponds to your primary work responsibilities? Administration Is Selected
Q3 Administration
- Top Executive or Senior Institutional Officer (1)
- Academic Dean (2)
- Institutional Administrator (3)
- Head of Division, Department, or Center (4)
- Academic Associate/Assistant Dean (5)
- Other (6)

Answer If SECTION 1 – Demographics Which of the following most closely corresponds to your primary work responsibilities? Faculty Is Selected
Q4 Faculty
- Teacher/Instructor (1)
- Other (2)

Answer If Which of the following most closely corresponds to your primary work responsibilities? Professional Staff Is Selected
Q5 Professional Staff
- Academic Affairs (instruction, library, museums, etc) (1)
- Athletics (2)
- Extension Programs or Technology Transfer (3)
- Facilities (4)
- Fiscal Affairs (budget, purchasing, etc) (5)
- Health/Medical Services (6)
- Information Technology (7)
- Institutional Affairs (human resources, institutional research, etc) (8)
- Research (research scientists, lab coordination, etc) (9)
- Student Affairs (Registrar, housing, counseling, etc) (10)
- Other (please specify) (11)
Q6 Number of years in your current position?
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
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- 25 (25)
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- 30+ (30)
Q7 Age
- 18 (18)
- 19 (19)
- 20 (20)
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- 51 (51)
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- 56 (56)
- 57 (57)
- 58 (58)
Q8 Gender
- Male (1)
- Female (2)

Q9 Race/Ethnicity
- Non-resident alien (1)
- Race and ethnicity unknown (2)
- Hispanics of any race (3)
- American Indian or Alaskan Native (4)
- Asian (5)
- Black or African American (6)
- Native Hawaiian or Other Pacific Islander (7)
- White (8)
- 2 or more (9)

Q10 What is your highest degree earned?
- Associate of Arts/Associate of Applied Sciences (1)
- Bachelor’s (2)
- Master’s (3)
- Ed. Specialist (4)
- Ph.D. (5)
- Ed.D. (6)
- J.D. (7)
- Other (please specify) (8) ________________
Q11 What was your major field of study in your highest degree?

- Business Management/Administration (1)
- Communication (2)
- Educational Administration (5)
- Teacher Education (6)
- Other Education (7)
- Other (please specify) (19) ____________________

Q12 SECTION 2 - Data Driven Decision Making
How would you rate your personal involvement with the Data Driven Decision Making (DDDM) effort/discussion at your institution?

- Not at all (1)
- Interested, but not involved (2)
- Somewhat involved (3)
- Highly involved (4)
- Leading the conversation (5)
Q13 Select the response that best describes the degree of involvement that each of the following positions have at your institution in regards to the use of DDDM.

<table>
<thead>
<tr>
<th>Position</th>
<th>Not currently involved in analytics (1)</th>
<th>Support/Contributor Role (2)</th>
<th>Leadership/Sponsor Role (3)</th>
<th>Don’t know (4)</th>
<th>Don’t have this position (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>President/Chancellor (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Chief Academic Officer or Provost (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Chief Learning Officer or Equivalent (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Student Success Leader (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Chief Information Officer or Equivalent (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Chief Data Officer or Equivalent (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Director of Institutional Research (7)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Chief Analytics Officer or Equivalent (8)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Chief Financial Officer or Chief Business Officer (9)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</table>
Q14 What priority does your institution place on the use of DDDM?

- Major institutional priority (1)
- Major priority for some departments, units, or programs, but not for the entire institution (2)
- An interest of the institution, but not a priority (3)
- Intentionally not a priority or interest (4)
- Little awareness, and therefore not a priority of interest (5)
- Don’t know (6)
Q15 Governance/Infrastructure
Please rate your agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My institution views the use of data as a long term investment, rather than a short term expense (1)</td>
<td>✓</td>
<td></td>
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<tr>
<td>My institution has measurable objectives that will indicate if success has been achieved (4)</td>
<td></td>
<td>✓</td>
<td></td>
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<tr>
<td>My institution has developed interventions to implement with appropriately identified students (5)</td>
<td></td>
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<tr>
<td>My institution has well defined goals for the implementation of use of data (6)</td>
<td></td>
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<tr>
<td>People from multiple offices across my institution are involved in the effort (8)</td>
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</tr>
<tr>
<td>My institution has the ability to store and manage increasingly large volumes of data (9)</td>
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</tbody>
</table>
Q16 The following questions ask about professionals with various skills and abilities. Please consider any individual employed by your institution (e.g. staff, faculty, etc) when answering these questions.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My institution has professionals who know how to use and apply data to their areas (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>My institution has professionals who have specialized training in data-use (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>My institution has a sufficient number of professionals who are able to provide support in the use of data (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>My institutional researcher knows how to present data/reports in ways that are visually intuitive and easily understood (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>My institution has professionals who train diverse constituents on the use of new and existing data systems (5)</td>
<td>☐</td>
<td>☐</td>
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Answer If Administration Top Executive or Senior Institutional Officer Is Selected Or Administration Academic Dean Is Selected Or Administration Institutional Administrator Is Selected

Q17 Data
For each source, please indicate to what extent your institution currently collects data:

<table>
<thead>
<tr>
<th></th>
<th>Does not currently collect (1)</th>
<th>There is an expressed desire, but no</th>
<th>There is a plan to begin collecting this data (3)</th>
<th>Some departments collect portions of this data (4)</th>
<th>My institution collects portions of this data (5)</th>
<th>Some departments collect all/ nearly all of this data (6)</th>
<th>My institution collects all/nearly all of</th>
<th>Don't know (8)</th>
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<td>this data (7)</td>
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<td>Student Records</td>
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<td>(e.g., demographics, academic history,</td>
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<td>achievement tests)</td>
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<td>application data application data</td>
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<td>evaluation, orientation data,</td>
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<td>high school/transfer information)</td>
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<td>Facilities</td>
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<td>(e.g., card swipes for access,</td>
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<td>food service usage, gym/recreational</td>
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<td>Financial Aid</td>
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<td>applied/accepted, dependency status,</td>
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<td>work study award)</td>
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<td>matching, preferences, placement,</td>
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<td>Alumni/Development</td>
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<td>employment data, transfer data,</td>
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<td>Learning/Management System/Course</td>
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<td>(e.g., user log data, assignment grades)</td>
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</table>
Q18 At my institution:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (4)</th>
<th>Agree (5)</th>
<th>Strongly Agree (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional reports routinely inform institutional decisions (1)</td>
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<tr>
<td>There is an established routine process for eliminating or phasing out unused institutional reports (2)</td>
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<tr>
<td>Persons attempting to replicate reports/data can do so regularly (3)</td>
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<tr>
<td>Institutional reports routinely inform departmental decisions (4)</td>
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<tr>
<td>Institutional reports routinely contain trustworthy data (5)</td>
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<tr>
<td>There are routine scripts/processes for refreshing/updating institutional reports (6)</td>
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</tbody>
</table>
Q19 Culture and Process. Please rate your agreement with the following statements regarding conversations about data, decision making, and student success on your campus:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree (1)</th>
<th>Disagree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My institution is ready to put resources behind the research necessary to implement DDDM (1)</td>
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<tr>
<td>My institution’s administrators generally accept the use of data for decision making (2)</td>
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<tr>
<td>My institution has had conversations regarding the sustainability of DDDM effort (3)</td>
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<tr>
<td>My institution has a clear vision of where it can make changes to help students be more successful academically (5)</td>
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<tr>
<td>My institution has a culture that accepts the use of data to make decisions (6)</td>
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<tr>
<td>My institution’s faculty largely accept the use of DDDM for improving teaching and learning (9)</td>
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<tr>
<td>My institution has shared the definition of “student success” with faculty, staff, and students alike (10)</td>
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</tbody>
</table>
Q20 Provide your best estimate of how data are being used in various functional areas of your institution. Select all that apply:

<table>
<thead>
<tr>
<th></th>
<th>We do not collect usable data (1)</th>
<th>Data are collected, but are never or rarely used (2)</th>
<th>We create and use analyses or reports to monitor operations or programs (3)</th>
<th>We create and use analyses or reports to make projections for programs or groups (4)</th>
<th>We create and use predictive analyses or reports that may trigger proactive responses (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Learning (real-time or on-demand assessment and feedback) (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Student Learning (learning outcomes, course completion) (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Student Degree Planning (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Student Progress (retention, graduation, etc) (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Enrollment management, admissions, and recruiting (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Cost to complete degree (6)</td>
<td>○</td>
<td>○</td>
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</tbody>
</table>
Q21 At my institution, I would describe the communication about data (either raw data or in report form) as:

- Highly decentralized: Data/reports shared in small groups within departments and selected individuals available with permission (1)
- Mostly decentralized: Data/reports shared within departments and selected individuals available if you know who to ask (2)
- Level: Nearly all data/reports shared across the institution and broadly available (3)
- Mostly centralized: Data/reports controlled by central administration or IT, but most made broadly available (4)
- Highly centralized: Data/reports controlled by central administration or IT available at their discretion (5)

Q22 In what ways have you participated in internal programs that have contributed to the development of your DDDM competencies in your current position?

- Departmental (1)
- Campus-wide (2)
- District level (3)

Q23 Who has influenced your DDDM skills the most?

- A supervisor (1)
- Co-workers (2)
- External constituents/partners (3)
- Professional relationships (4)
- Academic advisor/mentor (5)
- Academic peers (6)
Q24 Based on the following scale and definition of transformational leadership, rate yourself within the five characteristics in promoting DDDM: Transformational Leader - The transformational leader must have or gain the ability to link change to a collective purpose that acknowledges needs, values, and goals of the group and at the same time, fully engages followers. The vision is shared by everyone throughout the organization and both the leader and followers work collaboratively to transform and create new culture.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Low (1)</th>
<th>Medium low (2)</th>
<th>Medium (3)</th>
<th>Medium high (4)</th>
<th>High (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision: while shared by others, the vision is primarily responsible for the transformational leader (1)</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
</tr>
<tr>
<td>Influence Orientation: the process of shared governance results in increased delegation, empowerment, and self-actualization of both leaders and followers (2)</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
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<tr>
<td>People Orientation: the process of leader and follower interaction where strengths of each team member are maximized and there exists a strong focus on the individual (3)</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
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</tr>
<tr>
<td>Motivational Orientation: the process whereby followers are motivated to achieve and are excited through performance and results (4)</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
<td>🔄</td>
</tr>
<tr>
<td>Values Orientation: the process whereby a leader models ethical fiber of commitment, quality, integrity, trust, and respect. (5)</td>
<td>🔄</td>
<td>🔄</td>
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<td>🔄</td>
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</tbody>
</table>
Q25 SECTION 4 – AACC Leadership Competencies
The next questions addressed are the five competency domains for the community college leaders that have been developed and endorsed by the American Association of Community Colleges (AACC). For each component listed, please rate how well prepared you were coming into your first leadership position. 

Organizational Strategy
An effective community college leader promotes the success of all students, strategically improves the quality of the institution, and sustains the community college mission based on knowledge of the organization, its environment, and future trends.

| Development, implement, and evaluate strategies to improve the quality of education at your institution (1) | Not prepared (1) | Weakly prepared (2) | Somewhat prepared (3) | Prepared (4) | Strongly prepared (5) |
| Use data-driven decision making practices to plan strategically (2) | | | | | |
| Use a systems perspective to assess and respond to the needs of students and the community (3) | | | | | |
| Develop a positive environment that supports innovation, teamwork, and successful outcomes (4) | | | | | |
| Maintain and grow college personnel, fiscal resources, and assets (5) | | | | | |
| Align organizational mission, structures, and resources with the college master plan (6) | | | | | |
Q26 Institutional Finance, Research, Fundraising, and Resource Management

An effective community college leader equitably and ethically sustains people, processes, and information as well as physical and financial assets to fulfill the mission, vision, and goals of the community college.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
</tr>
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<tbody>
<tr>
<td>Ensure accountability in reporting</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Support operational decisions by managing information resources</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Develop and manage resources consistent with the college master plan</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Take an entrepreneurial stance in seeking ethical alternative funding sources</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>Implement financial strategies to support programs, services, staff and facilities</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>Implement a human resources system that fosters the professional development and advancement of all staff</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>Employ organizational, time management, planning, and delegation skills</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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</tbody>
</table>
Q27 Communication
An effective community college leader uses clear listening, speaking, and writing skills to engage in honest, open dialogue at all levels of the college and its surrounding community; promotes the success of all students; ensures the safety and security of students and the surrounding college community; and sustains the community college mission.

<table>
<thead>
<tr>
<th></th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulate and champion shared mission, vision, and values to internal and external audiences (1)</td>
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<td>☐</td>
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<tr>
<td>Disseminate and support policies and strategies (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Create and maintain open communication regarding resources, priorities, and expectations (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Effectively convey ideas and information to all constituents (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Listen actively to understand, analyze, engage, and act (5)</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Project confidence and respond responsibly and tactfully (6)</td>
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</table>
**Q28 Collaboration**
An effective community college leader develops and maintains responsive, cooperative, mutually beneficial, and ethical internal and external relationships that nurture diversity, promotes the success of all students, and sustains the community college mission.

<table>
<thead>
<tr>
<th>Embrace and employ the diversity of individuals, cultures, values, ideas, and communication styles (1)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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<tr>
<td>Demonstrate cultural competence in a global society (2)</td>
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<td>Involve students, faculty, staff, and community members to work for the common good (3)</td>
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<tr>
<td>Establish networks and partnerships to advance the mission of the community college (4)</td>
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<td>Work effectively and diplomatically with legislators, board members, business leaders, accreditation organizations, and others (5)</td>
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<td>Manage conflict and change by building and maintaining productive relationships (6)</td>
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<td>Develop, enhance, and sustain teamwork and cooperation (7)</td>
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<tr>
<td>Facilitate shared problems solving and decision-making (8)</td>
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</table>
An effective community college leader understands, commits to, and advocates for the mission, vision, and goals of the community college on the local, state, and national level.

<table>
<thead>
<tr>
<th>Value and promote diversity, inclusion, equity, and academic excellence (1)</th>
<th>Not prepared (1)</th>
<th>Weakly prepared (2)</th>
<th>Somewhat prepared (3)</th>
<th>Prepared (4)</th>
<th>Strongly prepared (5)</th>
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<tr>
<td>Demonstrate commitment to the mission of community colleges and student success through the scholarship of teaching and learning (2)</td>
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<tr>
<td>Promote equity, open access, teaching, learning, and innovation as primary goals for college (3)</td>
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<tr>
<td>Advocate the community college mission to all constituents and empower them to do the same (4)</td>
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<tr>
<td>Advance lifelong learning and support a learning-centered environment (5)</td>
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<tr>
<td>Represent the community college in a variety of settings as a model of higher education (6)</td>
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</table>
Q30 May we contact you to obtain clarification or further insight into some of your responses?
☑ Yes (1)
☑ No (2)

Q31 Thank you for your time. We appreciate your assistance!
APPENDIX C: INSTITUTIONAL REVIEW BOARD EXEMPTION

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1155 Pearson Hall
Ames, Iowa 50011-2197
515 294-4586
FAX 515 294-1437

Date: 9/28/2015

To: Brett Monaghan
2003 S 16th Street
Centerville, IA 52544

CC: Dr. Soko Starobin
N221A Lagomarcino
Yu Chen
N216 Lagomarcino

From: Office for Responsible Research

Title: Survey of Community College Data Driven Decision Making

IRB ID: 15-523

Study Review Date: 9/25/2015

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- You do not need to submit an application for annual continuing review.
- You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designees may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.