A CASE STUDY ON THE IMPACT OF UNIVERSITY BUSINESS DECISIONS ON NONTRADITIONAL AND ONLINE STUDENT PERSISTENCE

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By

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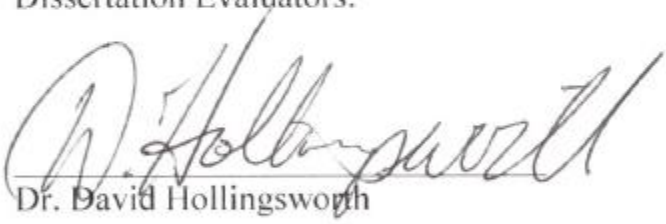

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I am dedicating this dissertation and degree to my Granny. She was the only person I spoke to on a weekly basis from the age of 18 to the time of her passing this year. She loved me when no one else could stand me. She was my best friend and closest kin. I accelerated my PhD program to less than two and a half years in the hope that she would see me graduate. She almost hung in there long enough, surviving until the age of 96. She saw me to the home stretch and was immensely proud.

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Abstract

This study on nontraditional and online student persistence and completion focused on four business components: a tuition rebate, online orientation course, revised academic calendar, and Borrower-Based Academic Year financial aid. Overall persistence rates increased from 67 percent to 76 percent following implementation. A differences of proportions *Z* test revealed considerable statistical significance ($z = 21$, $p < .001$, two-tailed). Additional analysis found statistically significant differences and/or positive student perceptions across groups on the influence of each initiative individually. The study also gathered student perceptions on various other factors. The highest rated influences on persistence and completion were the Christ-centered Focus, Online Format, and Quality of Education. The results demonstrate the effectiveness of the four-pronged strategy, while also shedding light on additional nontraditional and online student motivations.

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Chapter One

Introduction

Overview

Student retention is arguably the most researched topic in academia in the past few decades (Siegel, 2011). Institutions of higher education need to demonstrate that their students advance through their programs and graduate in order to attract students, funding, and higher rankings (Wray, Aspland, & Barrett, 2014). This is a fundamental measure of institutional effectiveness (Boton & Gregory, 2015). Schools that do this well tend to thrive, whereas schools that do not will struggle or eventually fail (Torkzadeh, Zolfagharian, & De La Rosa, 2016). Researchers and institutions often use the terms "student persistence rates" and "student completion rates" to reflect these critical measures. Many variables contribute to these rates, including student-related, instructor-related, course/program-related, and organization/institution-related factors. This study sought to evaluate the effectiveness of university business decisions (directed at organization/institution-related factors) on improving persistence and completion rates among nontraditional (often labeled "adult") and online undergraduate students. The research assessed the effectiveness of four specific initiatives using data spanning multiple years from a university's Learning Management System (LMS) as well as student survey data. The research served the needs of the university, the accrediting agency, and enhanced the literature base regarding strategies to improve persistence and completion rates among nontraditional and online students. This unique case study added

valuable information to the field through its combination of objective LMS student data with survey data reflecting the students' own subjective perspectives. The triangulation of these two data sets with the comprehensive literature review created valuable results concerning the success of the growing population of nontraditional and online college students.

Background

Adult and online higher education enrollments continue to swell in the United States (Allen & Seaman, 2013; McClelland, 2014). These generally interrelated student populations have been offsetting lagging traditional student enrollment (U.S. Department of Education, 2016). Although not growing as rapidly as the online segment, as of the 2011-2012 academic year, three quarters of all undergraduates have at least one nontraditional student characteristic and 55 percent had two or more (U.S. Department of Education, 2015). According to projections by the National Center for Education Statistics, nontraditional student enrollment growth will outpace traditional enrollment growth over the next decade and surpass nine million students in five years (Anderson, 2016). In the few decades since its inception, online higher education enrollment has grown to a third of all college students (Kentnor, 2015). Because many nontraditional programs are also online programs, and vice-versa, it is helpful to study them in conjunction. The study at hand took place at a college for nontraditional students where all programs were entirely online or hybrid.

Persistence and the related rates are critical issues across all types of higher education institutions. These rates factor into school rankings, funding, and even the

decisions to close schools (Wray et al., 2014). These rates also reflect the success or failure of schools in achieving their purpose for existence. Despite the importance of these measures, schools continue to struggle with student attrition. Over a quarter of all college students fail to return their second year (Olbrecht, Romano, & Teigen, 2016). Low persistence and completion rates especially plague adult and online programs (McGivney, 2004; Boston, Gibson, & Ice, 2011). This challenge served as the impetus for hundreds of studies on the factors involved over the past 15 years. Most of these studies, however, focused on personal factors pertaining to the students (Rovai, 2003; Yuen & Tsang, 2011; McClelland, 2014). University leadership has little influence over most of these student factors. Several studies identified institutional factors connected to persistence and completion (Brown, 1996; Street, 2010). The institutional factors are those that are directly under the control of the school, particularly school administration or leadership.

This study endeavored to enlarge the research base concerning institutional strategies that improve persistence and completion rates, specifically among nontraditional and online students. It integrated voluminous research spanning persistence and related variables across the higher education spectrum with research focused on adult and online higher education. According to Dr. Michael Siegel (2011),

> For a college-student retention plan to be effective, it must be comprehensive in nature and integrate a number of different philosophies and strategies. In short, retention plans must be tailored to a campus's needs, based on proven research, involve a wide range of campus constituents, and be planned with students' interests in mind (p. 8).

This research evaluated a case study in which one university implemented four initiatives changing institutional factors in the college for nontraditional and online students to

improve retention. The school, referred to as Midwestern Mountain University (MMU) in this study, selected each of the initiatives based on research and professional consulting. This study aimed to statistically evaluate the effectiveness of each initiative as well as the combined impact of all four initiatives. The goal was to identify those institutional business decisions that corresponded with the largest differences in persistence and completion rates in this particular case study. If these results aligned with the established research, other nontraditional and online institutions can implement similar strategies with greater confidence and stakeholder buy-in.

Purpose of the Study

This study sought to provide information that will help institutional leadership in higher education improve their students' persistence and completion rates, particularly with nontraditional and online students. The existing literature included many studies on tactics taken at the other levels of higher education (students, faculty, course, and program). This study sought to identify strategies that university leadership can leverage school-wide.

Although this was a case study at a single school, the MMU student body was a sample of the nontraditional student population. There were students living in all 50 states and many foreign countries enrolled in the online programs. Additionally, the initiatives enacted by the university leaders relate to common university variables. Leaders of other schools with nontraditional students can replicate the changes made by the school in this study. In order to achieve the purpose of the study, the research pursued the following goals:

1. Collect, evaluate, and summarize educational research regarding the factors contributing to higher education persistence and completion rates.
2. Advance the knowledge base regarding nontraditional and online student persistence and completion.
3. Evaluate the impact of several university business decisions (collectively and individually) on student persistence and completion.

Problem Statement

As previously mentioned, and as elaborated upon in Chapter Two, institutions of higher education need to continuously monitor, evaluate, and improve student persistence and completion rates. This is especially true among nontraditional and online students for two reasons:

1. The nontraditional and online student population demonstrates lower rates of both persistence and completion (Boston, Gibson, & Ice, 2011).
2. The nontraditional and online student population is rapidly growing, far outpacing the growth of traditional students (U.S. Department of Education, 2016).

Failure to effectively mitigate attrition concerns will result in billions of dollars in lost tuition income for schools, academic failure for millions of students, and a significant lost educational opportunity for America as a nation.

Research Questions

This study set out to answer the following research questions:

1. Will a four-prong university business strategy produce statistically significant differences in student persistence and/or anticipated completion rates for students benefitting from those initiatives?
2. Will financial incentives for persistence (in the form of tuition rebates) produce statistically significant differences in persistence and/or anticipated completion rates for students benefitting from those incentives?
3. Will changing the financial aid model (specifically to Borrower-Based Academic Year) produce statistically significant differences in persistence and/or anticipated completion rates for students using financial aid?
4. Will revising the academic calendar to eliminate course overlap and include weeklong breaks produce statistically significant differences in persistence and/or anticipated completion rates for students benefitting from the new calendar?
5. Will an orientation course for new students produce statistically significant differences in persistence and/or anticipated completion rates for those new students?
6. Will students perceive that one or more of the four initiatives (tuition rebates, Borrower-Based Academic Year financial aid model, revised calendar, and online orientation) impacts their own anticipated persistence or completion more drastically or more significantly?

Study Limitations

The limitations of this study included the following:

1. All data reflected the nontraditional/online student population at a single university. Therefore, the sample was not completely random. However, the demographics at this university were similar to those of nationwide nontraditional students.
2. It was not a true experimental study with isolated control groups and treatment groups for each of the four initiatives. The university implemented all four initiatives simultaneously to nearly the entire undergraduate population. However, not all students benefitted or participated in all four initiatives, thereby creating incidental treatment groups.
3. Accurate completion data for students benefiting from all four initiatives will not be available until first-year students graduate. Completion data for all students who started in the spring of 2016 (when the school implemented the initiatives) will not be available for upwards of eight to ten years, which is approximately the maximum amount of time students take to complete a bachelor's degree program. Therefore, the present study relied upon students' subjective survey responses and projections based on persistence data. A follow up study should be conducted in 2025 to assess the full impact of the initiatives on completion.

Research Assumptions

This study assumed the following:

1. Numerous variables factor into a student's decision to persist until program completion. University leadership has control over a few of these

organizational and business-related variables. Changing the values or presence of these variables resulted in statistically significant differences in student persistence and/or anticipated completion rates.

2. Applying a well implemented, research supported, four-prong university business strategy targeting student persistence and completion resulted in significant differences in student persistence and/or anticipated completion rates for students benefitting from the strategy.
3. Financial incentives for persistence (in the form of tuition rebates) produced statistically significant differences in persistence and/or anticipated completion rates for students benefitting from those incentives.
4. Changing the financial aid model (specifically to Borrower-Based Academic Year) produced statistically significant differences in persistence and/or anticipated completion rates for nontraditional students using financial aid in a trimester academic calendar.
5. Revising the academic calendar to eliminate course overlap and include weeklong breaks produced statistically significant differences in persistence and/or anticipated completion rates for students benefitting from the new calendar.
6. An orientation course for new students produced statistically significant differences in persistence and/or anticipated completion rates for those new students.

7. Students accurately perceived that one or more of the four initiatives contributed to their persistence and/or anticipated completion more drastically or more significantly than the others did.

Definitions

This study used the following definitions:

Adult/Nontraditional Student: "A student enrolled in a course beyond the high school level or who has one of the following characteristics: delayed entrance, part-time, works fulltime, single parent, has dependents, acquired a GED, or may be financially independent (Puzziferro & Shelton, 2009)" (cited in Koehnke, 2013, p. 17). "The National Center for Education Statistics (2011) defines nontraditional students as one who 1) delays enrollment; 2) attends part-time for at least part of the academic year; 3) works full-time while enrolled; 4) is considered financially independent for financial aid purposes" (cited in Stewart, 2015, p. 28).

Andragogy: "Malcolm Knowles' theory of adult learning which is learner focused and expresses the needs of adult learners like knowing why something is important to learn before undertaking to learn it; that adults can build on previous knowledge and experience in relating new information and are self-directed (Cercone, 2008; Kenner & Weinerman, 2011; McGrath, 2009)" (cited in Koehnke, 2013, p. 17).

Attrition: "Departure from a program without successful completion" (Rovai, 2003, p. 2). This is the opposite of completion in this study.

Borrower-Based Academic Year (BBAY): In this model of financial aid, the student's loan term begins when the student begins and spans three quarters of the calendar year

(for example: fall, winter, spring or winter, spring, summer). The student can then begin another loan term immediately after those three quarters end. The benefits of BBAY are that a) students gain loan eligibility more quickly (because the loan term begins when the student enrolls) and b) it can cover higher cost programs or programs with concentrated costs at particular times (Petersen, n.d.). In this study, the administration adopted this model with the hopes that it would help persistence and completion by increasing average credits per semester, reducing time to completion, and reducing overall costs to students.

Completion: Refers to the successful culmination of a student's program of study. Many researchers refer to this as Graduation (DesJardins & McCall, 2010; Gansemer-Topf & Schuh, 2006; Hall, 2014; Laugherman, Rover, Shelley, & Mickelson, 2015), but this study wanted to include students completing non-degree programs (certificates). The definition used in this study is similar to that used by other schools in the same persistence and completion program conducted by the accreditor (Northland Pioneer College, 2015).

Distance Education: *"*A teaching delivery method for students who are not physically present in a traditional classroom setting. There is a physical separation between the instructor and learner and an opportunity for two-way communication (Appana, 2008; Schlosser & Simonson, 2006)" (cited in Koehnke, 2013, p. 18).

E-Learning: "The computer and other electronic supported transfer of knowledge and skills. Typically, it is any learning that utilizes a network (LAN, WAN or Internet) for delivery, interaction, or facilitation (Li & Irby, 2008)" (cited in Koehnke, 2013, p. 18).

Financial Aid: "All forms of school-awarded or federal financial assistance to ease or eliminate the tuition burden to students" (Delleville, 2014, p. 10).

Hybrid Course: "Synonymous with blended learning, a hybrid or blended course combines traditional face-to-face classroom and online learning environments in one course (Appana, 2008)" (cited in Koehnke, 2013, p. 18).

Institutional Factors: "Those areas under the control of the institution (e.g. cost, staff responsiveness, course design) (Carroll, Ng, & Birch, 2009; Cross, 1981; Roberts, 2004)" (cited in McClelland, 2014, p. 14).

Learning Management System (LMS): "A software application that distributes online courses over the internet for meaningful collaboration between instructor and student, and peer interaction between students (Ellis, 2009)" (cited in Koehnke, 2013, p. 18). Blackboard® is the LMS used in this study.

Online Course: "A course for which all regularly scheduled classroom time is replaced by required activities completed at a distance and managed online. Online courses allow students to take courses from geographically remote locations with no expectation to physically come to a campus. In this context, fully online means that one hundred percent of the course is located online (Li & Irby, 2008)" (cited in Koehnke, 2013, p. 18-19).

Online Education: "A form of distance education or learning where the interaction among the instructor, course material and student takes place 100 [percent] over the Internet through a web site or web based learning management system (LMS)" (Hills, 2010, p. 16).

Online Learning: "Similar to eLearning. A learning environment where the supported transfer of knowledge, skills, and access to learning materials is done through the

computer or other electronic network such as a LAN, WAN or the Internet (Appana, 2008; Li & Irby, 2008)" (cited in Koehnke, 2013, p. 19).

Online Orientation: "Similar to a college orientation in which students are given the tools and resources to survive at a college or university, an online orientation provides the tools and resources to equip students for succeeding in online courses by detailing the personal and technological skills required (Bozarth, Chapman, & LaMonica, 2004)" (cited in Koehnke, 2013, p. 19).

Orientation Course: In this study, this term refers to the specific orientation course developed by MMU and implemented as one of its four-fold initiatives. MMU launched this new orientation course in the spring of 2016 and made it a requirement for new, first-time students.

Persistence: "The act of students continuing to take course(s) in a subsequent term after completion of the initial quarter's coursework. Retention is a summary of attrition and persistence" (Delleville, 2014, p. 11). The data model used at the university in this study measured this concept as the percentage of distinct enrolled students in a given block who have enrolled in the next anticipated block (excluding graduated and deceased students). In concise terms, this study defines persistence as ongoing enrollment (from block to block).

Retention: "The combined sum of attrition and persistence, yielding a single rate of student progression. A retention rate is typically titled by term, where the number of remaining students in term x is divided by the number of students within the original, first-term cohort" (Delleville, 2014, p. 11). "The Department of Education (2011) defined retention rate as (a measurement of persistence) the percentage of students that

enrolled in fall of one year and returned the following year" (cited in Lech, 2014, p. 18-19).

Revised Academic Calendar: For this study, this term refers to the specific changes made by MMU to its academic calendar to reduce burnout and improve persistence and completion. MMU implemented the new calendar as one of its four-fold initiatives in the spring of 2016. This is not a standardized term. It is identified here because it is used throughout the study to refer specifically to the changes made to MMU's academic calendar at the beginning of 2016 as part of the persistence and completion initiative.

Standard Academic Year (SAY): As opposed to BBAY, this financial aid model bases dissemination of financial aid on the standard, two semester academic calendar (Petersen, n.d.).

Stopout: A temporary dropout (DesJardin & McCall, 2010).

Student Achievement Award (SAA): This incentive for persistence is one of the four-fold strategic initiatives implemented by the school in this study. It provides students with tuition rebates for remaining continuously enrolled. It is referred to in this study as SAA and Tuition Rebate (CCU's Student Achievement Award, 2017).

Student Learning Outcomes: "The knowledge, skills and abilities that students attain through a specific course, program, or educational experience (Barr & Tagg, 1995)" (cited in Koehnke, 2013, p. 20).

Student Persistence: "The degree to which a student continues in a course through course completion (Dietz-Uhler, Fisher, & Han, 2007)" (cited in Koehnke, 2013, p. 20).

Synchronous Learning: "Refers to students who learn at the same time and in the same place usually requiring online groups or cohorts (Scagnoli, 2001). The uses of live chats

or webinars within online courses are examples of live, real-time communication" (cited in Koehnke, 2013, p. 20).

Traditional Student: In many cases, this term refers to students taking classes in-seat, as opposed to online (Wighting, Liu, & Rovai, 2008). In other cases it refers to college students aged 18-23, as opposed to adult/nontraditional students (Capps, 2012). This study uses the term to reflect both of those definitions.

Withdrawal: "Requesting removal from the course of study prior to completion of the enrollment period" (McClelland, 2014, p. 15).

Summary

Nontraditional and online higher education programs already comprise a large portion of the American higher education system, and their growth continues to outpace those of traditional higher education. One of the top priorities of any institution of higher education is to ensure that students successfully advance and complete their programs. This study provided an in-depth evaluation of one university's strategies to improve the persistence and graduation rates in its nontraditional and online college. The next chapter provides a review of published works related to nontraditional and online higher education as well as student persistence and completion rates. The chapter provides a particular focus on the factors that correlate with persistence and completion and how schools/researchers have attempted to improve those rates with programs based on the correlated factors.

Chapter Two

Review of the Literature

Introduction

Nontraditional and online curricula are an increasingly important category of higher education. Public awareness and interest in online higher education, as well as in nontraditional adult higher education, have increased dramatically since the turn of the century (Allen & Seaman, 2013; Betts, Hartman, & Oxholm, 2009; McPherson & Bacow, 2015). Dabbagh and Bannan-Ritland (2005) defined online learning as "an open and distributed learning environment that uses pedagogical tools, enabled by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction" (as cited in Laing & Laing, 2015, p. 41). Spurred by the global proliferation of the internet and related technologies, American universities (serving worldwide student populations) have implemented online programs and seen dramatic enrollment activity. As of 2012, 6.7 million of the 20.6 million American students enrolled in a college course enrolled in an online course (Kentnor, 2015).

The flexibility of online learning enables nontraditional students (those older than the typical 18-23-year olds) to seek and obtain degrees (Murtaugh, Burns, & Schuster, 1999; Packham, Jones, Miller, & Thomas, 2004). These students are often working full time and rearing families. Their studies must fit into a busy adult schedule. The online and hybrid (containing both traditional and online components) degrees allow such students to study from home on evenings and weekends or whenever their schedule

allows (Hyllegard, Heping, & Hunter, 2008; Inan, Yukselturk, & Grant, 2009; Kemp, 2002; Park, Perry, & Edmonds, 2011). Substantial research has also demonstrated that distance and online learning are as effective (and in some cases more effective) than traditional, in-seat learning (Bell & Federman, 2013; Maddix, Estep, & Lowe, 2012; Moore & Kearsley, 2012).

Although proliferating in number, nontraditional and online programs present challenges in implementation. A major challenge arising with these nontraditional, online programs concerns higher attrition rates than in conventional programs (Angelino & Natvig, 2009; Blazer & Miami-Dade County Public Schools, 2009; Boston et al., 2011; Dray, Lowenthal, Miszkiewicz, Ruiz-Primo, & Marczyski, 2011; Dietz-Uhler, Fisher, & Han, 2007; Harrell & Bower, 2011; Koehnke, 2013; Lorenzo, 2011; Simpson, 2013). Recognizing this, many universities are working with their accrediting agencies to study, address, and potentially ameliorate this problem. For example, the Higher Learning Commission (HLC) created the Persistence and Completion Academy for this purpose. The HLC leadership members selected certain schools under their accreditation to complete this four-year program. Among academy requirements are the collection and analysis of relevant data pertaining to students, courses, programs, university variables, and instructors, and the identification of variables associated with persistence, completion, dropout, and related outcomes. The participating universities then devise strategies based on their data and research to improve the outcomes. After they implement these strategies, they assess the effectiveness of the changes through additional data collection and analysis (The Academies, n.d.). One school participating in this academy program is a mid-sized Christian university in Colorado which will be

the focus of this dissertation. It is referred to as Midwestern Mountain University (MMU) for purposes of anonymity.

The literature review presented in this chapter summarized the published literature pertaining to student persistence and completion in higher education, with a focus on nontraditional and online programs. The study loosely defined "persistence" as ongoing enrollment and "completion" as the fulfillment of the student's academic goals. There were two goals of this literature review. The first goal was to identify those variables most likely to correlate with or predict, in a statistically significant manner, student persistence, completion, or both. The second goal was to identify those organizational and administrative strategies that have proven to be the most effective in improving persistence and completion rates.

This study spanned an array of broad topics in higher education. It grouped persistence and completion variables into four categories, relating to the student, the course/program, the faculty, and the university/administration. Although there was considerable overlap of variables and topics across these categories, they provided a useful framework. The primary focus of this study was the interplay between university/administration related variables, and factors associated with persistence and completion. The purpose was to identify the most significant variables that a school's administration can address in programs to improve persistence and completion. There are substantial and growing research bases evaluating most of these variable categories. Due to the abundance of research on the relevant topics and related variables, this literature review summarized key findings in student persistence and completion as they pertained to online and nontraditional higher education programs. The research results

guided the research questions that assessed the approach implemented within one of two colleges at Midwestern Mountain University. This study evaluated the strategies of the college's program, then compared and contrasted them with those of the existing research body.

Following the literature review, this study included the collection and assessment of baseline data at the adult (nontraditional/online) college within MMU, and then data as it became available following the implementation of its four-pronged strategy. The analysis provided additional research support concerning the variables associated with persistence and completion as identified in the literature and as addressed by the school's administration. Due to the complexity and overlapping influence of the college's strategic components, this study also administered a persistence survey and a completion survey (see Appendix C and D). The analysis also sought to evaluate the effectiveness of the four data-driven decisions made by the college to improve persistence and completion rates. The results will guide the continuous process of administrative policy and strategy improvement at Midwestern Mountain University. Additionally, at least by implication, the strategies employed at this school, particularly those supported by additional research in the literature, should assist other school leaders in determining strategies of their own to improve persistence and completion, particularly among their nontraditional and online student populations.

Importance and Benefits of Nontraditional and Online Higher Education

The Importance and Growth

Online and adult (nontraditional) higher education enrollments in America have skyrocketed since the turn of the millennium (Laing & Laing, 2015; Taylor, Dunn, & Winn 2015). According to Allen and Seaman (2013), in the decade between 2002 and 2012, the proportion of chief academic leaders who view online learning as critical to their institutions' long-term strategies grew from less than 50 percent to almost 70 percent. They also stated that in each of those ten years, online enrollments increased at rates well above those of higher education as a whole. As of 2013, there were nearly three million students enrolled exclusively in distance education courses (National Center for Education Statistics, n.d.). Capps (2012) stated, "A growing [percentage] of today's college-goers are adult students, and the economic and cultural trends driving this growth are here for the long term" (p. 38). Surprisingly, 74 percent of all undergraduate students in the 2011-2012 school year had at least one nontraditional student characteristic (characteristics covered in the next section) (National Center for Educational Statistics, 2015). Additionally, the number of students 25 and older increased by 43 percent from 2000 to 2009, as compared to 27 percent for students under 25. The National Center for Educational Statistics projects this trend to continue for 2010 to 2019, with corresponding increases of 23 percent versus nine percent (Claybrooks & Taylor, 2016).

Not only are online and adult higher education programs growing in number and strategic importance, they are also becoming an industry of their own with a distinct population and research base studying the burgeoning sector and generating operating

models and theories to improve its performance. Theories and models embedded in these studies include Transactional Distance Theory (Moore, 1973), Andragogy (Knowles, 1973), Social Presence Theory (Short, Williams, & Christie, 1976; Gunawardena & Zittle, 1997), Online Community of Inquiry (Garrison, Anderson, & Archer, 2000), Garland's Model of Distance Learning modified with technology (Schilke, 2001), Yorke and Thomas's Retention Model (Yorke & Thomas, 2003), Transformative Learning Theory (Taylor, 2007), Online Collaborative Learning (Harasim, 2012), Contextualized, Situated, & Ecological Learning (Lowe as cited in Maddix et al., 2012), Online Learning Communities (Yuan, 2014), the Asynchronous Discussion Communication Satisfaction Model (Hung & Chou, 2014), and the Online Student Retention Model (Delleville, 2014).

Additionally, there is a plethora of academic journals devoted exclusively to the industry of nontraditional/online higher education. These include *Online Learning, Journal of Asynchronous Learning Networks, Quarterly Review of Distance Education, Online Journal of Distance Learning Administration, Journal of Educators Online, The Internet and Higher Education*, and many more. The rapid proliferation of research, models, and theories testifies to the growing importance and pervasiveness of nontraditional programs. The reason why this field is growing so quickly is due to the many benefits and substantial value it delivers to the system of higher education.

The Benefits and Value

Online and nontraditional enrollments in higher education steadily increase because these programs provide benefits and value to the students, universities, and many related stakeholders. While there has been considerable debate over the quality of online and

distance learning compared with traditional, in-seat learning, evidence suggests they are largely equivalent. According to Lech (2014), Thomas L. Russell compiled a list of 355 research studies that documented no significant difference in student learning outcomes when comparing distance education and face-to-face education. Larson and Sung (2009) found no significant difference between learning effectiveness of online learning versus face-to-face versus blended learning. According to one literature review, the major criticisms of online instruction were increased transactional distance and decreased social presence. Transactional distance refers to the physical, cognitive, and psychological distance between the instructor and the learners. Higher transactional distance can lead to feelings of isolation, leading to decreased motivation and eventually attrition (Moore, 1973). Social Presence Theory, developed by Short, Williams, and Christie (1976) argued that effective communication is a factor of communication media and social presence. Face to face interaction has the most social presence, and text based communication has the least. Social presence in online courses defines how students relate to each other and shapes the effectiveness of their communication, and subsequently, their learning (Kehrwald, 2008). However, Maddix et al. (2012) pointed out that "because mentored online seminar courses increase both structure and dialogue, transactional distance is significantly decreased and social presence is significantly increased" (p. 45). The increased structure and additional time to respond in online discussion forums can actually increase the quality of the discussions, the higher-level thinking of the students, and the amount of academic material that students can integrate. Social presence is vital to collaboration and is a precursor to cognitive presence, which

develops when learners rise above their inclination to be sociable and supportive (Clouder, Dalley, Hargreaves, Parkes, Sellars, & Toms, 2006).

Due to the sizable investment in the established, traditional system of higher education, many researchers set out to prove its superiority over online and distance learning. McPherson and Bacow (2015) assert that "There are no statistically significant advantages of traditional instruction over online instruction in terms of meeting the educational objectives, despite an abundance of studies seeking to document this, including Means, Toyama, Murphy, Bakia, & Jones 2009; as well as Bell & Federman 2013" (p. 145).

Regarding nontraditional and online programs, researchers in the first decade of this millennium showed repeatedly that online education is on par with or exceeds that of traditional education. In their book, *Distance education: A systems view of online learning*, Moore and Kearsley (2012) list a number of such studies, as follows in this paragraph. Lobel, Neubauer, and Sweberg (2005) demonstrated that online students devoted more time to social and academic interaction than in-seat students did. In 2007, Hughes, McLeod, Brown, Maeda, & Choi, found no significant differences in either performance or student perceptions between the in-seat students and online students in algebra classes. Cragg, Dunning, and Ellis (2008) demonstrated that the quality of interaction between students and their instructors was just as high in online courses. Rabe-Hemp, Woollen, and Humiston (2009) established that online students actually outperformed their in-seat counterparts because they spent more time preparing for the course, were more involved in the class discussions, and were more reflective in their learning practices. Moore and Kearsley (2012) cited similar results in several more

studies, including Williams (2006), Olson and Wisher (2002), and Neumann and Shachar (2003).

Most studies in the literature provide positive support for online higher education as an alternative to traditional, in-seat programs. According to Nguyen (2015),

> Compared to the number of studies that found positive or no significant effects for student learning outcomes in the online format, the number of studies that found mixed or negative significant effects is much smaller, by a full order of magnitude… about 92 [percent] of all distance and online education studies find that distance and online education is at least as effective, if not better, than traditional education. About 3 [percent] of the studies compiled by the site show the reverse, that traditional face-to-face format is more effective, and about 4 [percent] show mixed findings (p. 313, 315).

Even the few studies that do support traditional learning over online learning have explanations. A few studies that found unfavorable results can be attributed to the differences in time that students invested (Brown & Liedholm, 2002; Hiltz, Coppola, Rotter, Toroff, & Benbunan-Fich, 2000). Figlio, Rush, and Yin (2010) found modest unfavorable evidence, particularly among Hispanics, males, and lower-achieving students. However, the authors admitted several threats to both internal and external validity (treatment diffusion, volunteer effect, and grade incentive). Xu and Jaggars (2013) presented the strongest unfavorable results (slightly lower grades and persistence rates) in their analysis of over 40,000 students. Their study also demonstrated more pronounced effects among males and lower-achieving students. These studies demonstrate that online learning is not ideal for every student, but it appears to be at least as effective among academically prepared students suited for androgogical approaches (discussed later in this chapter).

One possible validity issue in the literature regarding online versus traditional education is self-selection bias. Students freely choose the format of their education in most instances. Students who can manage their own learning often choose online learning because of the flexibility. Many of these students are higher achievers overall. Several studies controlled for the self-selection bias and found unfavorable results for online students (Anstine & Skidmore, 2005; Brown & Liedholm, 2002; Coates, Humphreys, Kane, & Vachris, 2004; Gratton-Lavoie & Stanley, 2009). However, online technology and course design rapidly improve. Early studies comparing online to in-seat learning outcomes would yield very different results today because of the rapid proliferation of online programs, technologies, and occupations devoted exclusively to them. There are now many more high-quality Learning Management Systems from which to deliver online education. The communication technologies that are now commonplace in these LMS offerings that studies link to improved learning outcomes, persistence, and completion include video conferencing, online orientation courses, Open Educational Resource options, increased connection availability and speed, mobile learning, research-based best practices, and support services (Arbaugh, 2014; Ciampa, 2014; Fillion & Ekionea, 2012; Hachey, Wladis, & Conway 2012; Koehnke, 2013; Lemak, Shin, Reed, & Montgomery, 2005; Lorenzo, 2011; Pittenger & Doering, 2010; Reissman, 2013). The research and best practices also provide online instructors and educational institutions with the knowledge of how to conduct online programs more effectively, such as through the use of professional Instructional Designers trained in online program development (Maddix et al., 2012). The increase in supply also drives competition for students and forces schools to find ways to improve their programs. It is

apparent that not every online program is high quality, but the availability of high quality programs is increasing (Keetch, 2014).

This continuous validation has underpinned the growth of online and nontraditional higher education approaches, but there are many additional causes bolstering it. Arbaugh and Duray (2002) attribute the growth to "technological advances, an increasing number of people with internet access and competitive pressure from external stakeholders" (as cited in Laing, 2015, p. 42). Berge (2002) adds that, "In addition, there is a new generation of students who wish to set their own time, pace and place as to where learning will occur" (as cited in Laing, 2015, p. 42). McPherson and Bacow (2015) describe benefits for both students and universities: "the two most prominent drivers of popularity among students were cost and convenience. A major factor driving the schools (other than student demand) was that the internet affords a relatively easy way to scale education (reaching more students with less expense) "(p. 140). They go on to explain that, "After centuries of experience, traditional educational methods are not outperforming the new field of online education. This means that the growth in effectiveness will most likely occur with online education as the experience mounts" (McPherson & Bacow, 2015, p. 146).

The research shows that the online and distance education industry has benefits and value for the students and universities. It offers flexible scheduling for the busy adult student and is much more cost effective for institutions because there is no need to pay for additional brick and mortar classrooms. The good news for the traditional higher education system is that it is not losing many students to this newer, growing subset of higher education. This is because online, adult higher education is attracting a distinct

group of students, many of whom did not or would not enroll in traditional in-seat schools. Online and nontraditional programs target an older audience that traditional university recruiters largely ignore. The new programs effectively expand the market of potential consumers rather than just compete for the same ones. In some cases, opportunistic capitalists, such as the Apollo Group and its University of Phoenix created online programs of substandard quality. Readers need to be cautioned to not form perceptions of online higher education based on such unaccredited "diploma mills," as they are referred to (Angulo, 2016). The government is publicly shutting down and sanctioning a number of these (including Belford University in 2012, ITT Technical Institute in 2014, and Corinthian Colleges in 2015), leading to more knowledgeable consumers (Angulo, 2016; Flores, 2016; and Walsh, 2015). Some argue that open enrollment policies for many nontraditional programs allow unqualified students to access the educational system, whereas traditional programs might reject them. The government, under President Obama's leadership, promoted greater access for these under-represented students. Many schools, including the college in this study, did not lower the quality of the education in order to accommodate less academically prepared students. Instead, such schools enhanced student services tasked with helping these students succeed. Although many schools may have lowered the academic entrance requirements for the adult and online programs, they have the opportunity to offset the challenge of academically underprepared students through enhanced student support services and other strategies.

Nontraditional and Online Student Distinctions

Many Americans do not follow the traditional high school direct to college model. Some young adults go straight into the workforce. Some settle down to rear children. Many do a combination of both. There are also people who disliked the traditional in-seat educational model. Others have disabilities that hinder their ability to attend such classes or learn in them. For most of the twentieth century, these people were unlikely to go back to school. However, there are now millions of students meeting these descriptions enrolled in college online and adult education programs, because they open the doors of higher education for them. Unfortunately, as with most things, there are those schools and students who abuse the opportunity. This includes the aforementioned diploma mills as well as students who lack the moral maturity to repay their loans. The government cannot require schools to lower their standards and force students into the system only to have them fail. It is also unethical to force the taxpayers to repay the delinquent loans, which are mostly now under the control of the federal government. Schools should not admit students who will likely fail, without providing safeguards and assistance for them.

In popularizing the "adult learner" subset of education in America in the late twentieth century, Malcolm Knowles argued that adults have six distinct characteristics that differ from youth when it comes to learning. These characteristics are as follows: the capacity for self-directed learning, life experiences to which they can connect the learning, learning needs that relate to their roles in society, ability to benefit from problem-centered learning approaches and the immediate application of material, drive to learn more by internal factors than external ones, and a heightened need to know why they should learn the material (Merriam, Caffarella, & Baumgartner, 2006). These

differences required a departure from the traditional pedagogical approach common in many large lecture halls. Knowles labeled a new approach that capitalized on the six differences as "andragogy." Over the years, Knowles and other researchers consistently validated the importance of life experience in andragogy and the ability to connect it with the learning process (Aderinto, 2006; Cercone, 2008; Goddu, 2012; Kenner & Weinerman, 2011; McGrath, 2009; and Ross, 2011 as cited by Koehnke, 2013, p. 31).

Building on the foundation created by Knowles' concepts in andragogy, researchers have added to the list of adult learner distinctions. In the past two decades, the focus and terminology have shifted from "adult learners" to "nontraditional learners." The National Center for Education Statistics attributes nontraditional status based on the presence of one or more of the following characteristics: older than typical age, part-time attendance, being independent of parents, working full time while enrolled, having dependents, being a single parent, and being a recipient of a GED or high school completion certificate. As mentioned earlier, 74 percent of students possess at least one of these characteristics (National Center for Educational Statistics, 2015).

Park et al. (2011) characterized nontraditional students as having one or more of the following characteristics: older, learning disabled, single parents, also working at the same time, or those with substantial family-care responsibilities. Most traditional 18-22-year-old students study full time and occasionally work part-time on the side or over the summer. Adult students generally work full time and attempt to fit education around that work schedule. Seay (2006) defined the nontraditional student as possessing one or more of the following characteristics: does not enter college immediately after high school;

attends college part-time; works full time; is financially independent; is responsible for dependents; is a single parent, and/or lacks a high school diploma.

Several other researchers also noted that nontraditional students are usually older, including Carr (2000) and Diaz (2002) (as cited by Lech, 2014). Ice, Gibson, Boston, & Becher (2011) as well as Capps (2012) specifically stated that these students were 25 years old and above to distinguish them from the traditional 18 to 23-year-old student populations. Additional researchers grouped online and adult students together. These researchers described them as students whose educational pursuits had been interrupted, may represent lower socio-economic brackets, may have families to care for, are also working, and are attracted to the flexibility that online learning offers (Capps, 2012; Huang, 2002; Hyllegard et al., 2008; Inan et al., 2009; Kemp, 2002). This study classifies all undergraduate students enrolled in the adult college at MMU as nontraditional. The traditional undergraduates enroll in the other, campus-based college at the university.

Due in large part to the convenience afforded by the internet and related technologies, people who had previously been unable to pursue academic programs are now enrolling in steadily increasing numbers. This is a distinct group of learners from the traditional college student demographic. These nontraditional, adult learners are older, busier, more experienced, and often representatives of minority groups or lower socioeconomic classes. Although students in this new group of higher education enroll by the millions, a significant proportion of them do not persist until degree completion.

The Problem with Persistence and Completion Rates

Adult students are engaging in higher education in record numbers. Many of them take advantage of the flexibility that online and distance education programs provide. They are able to fit schoolwork around their employment, family, and social obligations. Although millions engage in such educational programs, a relatively low percentage of them persist to degree completion. As previously stated, this study defines "persistence" as ongoing enrollment and "completion" as the fulfillment of the student's academic goals. These terms vary in definition from study to study. Rovai (2003) defined persistence as "the length of time an adult learner attends classes" (p. 2). According to Lech (2014), persistence was a measure over time, spanning multiple terms, versus retention, which was limited to a single course. In Lech's study, "persistence was evaluated based on how many students started another course after the completion of the university success course" (2014, p. 18).

Completion can be even more difficult to concisely define and measure. In most cases, it refers to the completion of a full degree program, otherwise referred to as graduation. However, there are many instances, particularly in adult and online education, in which the student is not pursuing a full degree at that school. Students may take a course or two simply for the sake of learning, with no intention of pursuing a degree. Other times, students are only taking a few courses at the school with the goal of transferring those credits to another school. If the student achieved his or her goal but did not complete a full degree program at a given school, it should not hurt the school's completion numbers. A more accurate and meaningful perspective on completion is therefore tied to the student's goals. Students who enroll to take three courses for

personal and professional development successfully complete their programs of study when they finish the third course. Many schools and government agencies (such as NCES) currently count those students in their non-completion numbers. Neither the school nor the government can tell those students that they failed to complete. According to the students' goals, they succeeded and successfully completed. Only when a student declares the intention to complete a program, and definitively fails to do so, should it count against completion rates. Of the students who leave without completing a degree, if they state in an exit survey that they have successfully completed, then it should count towards successful completion. One note of caution, however, is that many students report a degree of study for financial aid purposes, rather than because they truly aim to complete that degree. Completion rates do not replace graduation rates, but supplement them with additional details. Both are important. Accreditors and governments should not base the success of the school on one or the other number. Because of the varying definitions currently used, studies attempting to assimilate and meta-analyze completion/graduation rates are not conclusive. These complications necessitate additional terminology and metrics, such as distinct completion rates and graduation rates. This complicates the data collection process, but clarifies the results. In order to obtain the additional data, schools will likely need to implement an exit/completion survey, which this study intends to utilize.

Further complicating the study of persistence and completion is that there are several other inter-related terms used in similar studies on measuring student progress. Related terms include retention, attrition, drop-out/withdrawal, graduation, success, and engagement. The Department of Education defines the retention rate as "a measurement

of persistence… the percentage of students that enrolled in fall of one year and returned the following year" (Lech, 2014, p. 19). Lech noted that researchers use the term inconsistently in the literature, particularly regarding the time span (week-to-week, course inception to completion, semester inception to completion, semester-to-semester enrollment, and year-to-year enrollment). Tait (2004) noted that retention statistics vary due to the diversity of the student body. Referring to these nontraditional/online students, Tait explained, "they may choose to mix and match courses, take breaks in their study, opt not to sit [for] examinations or participate in any summative assessment and simply end their relationship with the institution once they judge that their learning is complete or sufficient for their needs" (p. 98). Tait (2004) also noted the additional dilemma, which seems to trouble online and nontraditional students more, that, "students may choose courses that are inappropriate or for which they are ill prepared" (p. 99).

Several researchers noted that persistence, completion, and retention rates present challenges in measurement because a certain amount of student withdrawal is actually normal and not indicative of any failure on the part of the institution or student (Simpson, 2004; Woodley, 2004). McGivney (2004) added that "all researchers in the field emphasize that non-completion is a complex issue" (p. 37) and that "there will always be some students who do not complete … It is a fact of life that people's choices, aspirations and circumstances change" (p. 45). Nontraditional students, particularly those with families and full-time jobs, seem to face more potential change and uncertainty than traditional students living on a college campus do. Nichols (2010) cautioned researchers on the importance of clearly defining retention in similar ways to ensure that results are transferable.

A concept closely but inversely related to retention is attrition. Rovai (2003) defined attrition as "departure from a program without successful completion" (p. 2). Some researchers and institutions refer to attrition as dropout or withdrawal. Assessing this concept seems straightforward but even it presents problems in measurement. Schools vary in their classifications as to when they officially record a student as a dropout/withdrawal. In some cases, the system flags the student after dropping a single course and in others when the student drops all courses in the current and future terms. Schools can also choose to wait until the student fails to enroll for multiple consecutive terms or until the student officially informs the school of the decision to withdraw or transfer. In order to alleviate some of the confusion, schools must distinguish between dropout (permanently leaving) and stopout (temporarily leaving) (DesJardins & McCall, 2010). Researchers use the term "swirling" to describe the transitory nature of adult and online education (Boston et al., 2012). Campbell and Mislevy (2009) describe swirling as "the inconsistent flow in and out of college coursework from term-to-term, institution-to-institution" (p. 2-3). There is little consistency across the literature and across the field of higher education in how to define and measure how swirling affects attrition, dropout, retention, persistence, and completion rates. Student success and engagement are terms that are arguably even more nebulous. There is no consistency in the research regarding the use of these terms, making meaningful meta-analysis of them challenging or even useless to some researchers.

There is clearly a lack of consistency in defining and measuring the inter-related concepts pertaining to student success constructs. Schilke (2001) modified Garland's 1992 model of the barriers to persistence to create a technology enhanced conceptual

model. Both models provide a glimpse at the numerous, simultaneous, inter-related factors at play (see Appendix E). Despite inconsistencies in labels and constructs, there is overwhelming agreement that online/adult/nontraditional higher education can improve in the areas of persistence and completion (Carr, 2000; Howell, Laws, & Lindsay, 2004; Kember, 1995; Koehnke, 2013; Laing & Laing, 2015; Lech, 2014; Lee & Choi, 2011; Liu, Gomez, Khan, & Yen, 2007; Murtaugh et al., 1999; Rovai, 2003; Taylor, Dunn, & Winn, 2015; Tinto, 2006; and many more). Several studies demonstrated that attrition rates for online students are 10 to 20 percentage points higher than for those attending in a face-to-face format (Angelino & Natvig, 2009; Carr, 2000). According to Lech (2014), "The literature suggested that by the nature of online learning, retention is low, and that attrition and withdrawal was high based primarily on the student type" (p. 38). Flood (2002) reported attrition rates of 70 to 80 percent in online institutions. In contrast, the overall estimates on attrition rates in the United States are between 30 and 50 percent (Law & Patil, 2015). The overall retention rate (defined as the percentage of first-time, full-time, degree-seeking students returning the following fall) was 80 percent at four-year degree-granting institutions and 61 percent at two-year degree-granting institutions in 2013 (U.S. Department of Education, 2016). Sixty percent of students who began a bachelor's degree in 2008 completed that degree within six years (U.S. Department of Education, 2016). According to the National Student Clearinghouse Research Center's analysis of 2008 data, that rate was only 42 percent for adult students (Taylor et al., 2015). The overall numbers for persistence, retention, and completion are low and those numbers are even lower for adult and online students. The least scholarly source, the U.S. News and World Report (2015) reported the most favorable estimates of student

attrition rates at online institutions (at least three to five percentage points higher than those rates at traditional institutions). The factors contributing to these low rates are numerous.

One important observation is that because the persistence, completion, and related terms are so closely related, strategies to improve one generally improve the others. Persistence and retention are precursors to completion and graduation. Attrition, withdrawal, and dropout prevent persistence, retention, completion, and graduation. The research by Whalen, Saunders, and Shelley (2010), Gansemer-Topf and Schuh (2006), and Ryan (2004) demonstrated statistical significance among variables with both persistence and completion. Additionally, all studies demonstrating statistical significance for variables with withdrawal/attrition/dropout, such as Chen (2012), Doggrell and Polkinghorne (2015), Lech (2015), and Shaw, Burrus, and Ferguson (2016), apply to both persistence and completion, because a student no longer in school cannot persist or complete. The close relationship between these rates facilitates research because persistence and retention are short term variables, whereas completion and graduation are long term, requiring up to ten years for many nontraditional students.

The Correlated Variables by Category

Most researchers agree that higher educational organizations desire to improve the percentage of students who persist until completion. This is especially true for nontraditional and online students. A comprehensive literature review of over two hundred resources revealed numerous related variables. This paper categorizes the variables into four groups: student-related, faculty-related, course/program related, and

university/institution-related. Many of the variables can just as easily fit in a different category because of the interdependent and interrelated nature of the categories. Although there is considerable overlap of these factors into two or more possible categories, this categorization will assist in the systematic review of the literature.

Student. The first category pertains specifically to the student. It includes the intellectual, social, demographical, financial, geographical, emotional/volitional, and behavioral characteristics of the students, as well as their degrees of academic preparedness. Early researchers focused more on the student-related factors than the other three categories, publishing scores of studies on the student variables pertaining to persistence, completion, and related concepts. This section will summarize the student variables by characteristic category. It will reveal the positive and negative variables in each category. A positive effect equates to a positive correlation or predictive relationship with persistence, retention, and completion; and/or a negative correlation or predictive relationship with attrition/withdrawal. A negative effect suggests the reverse.

Several studies demonstrated positive variables pertaining to student intelligence, typically as measured by standardized test scores (Alcaron & Edwards, 2013; Brigman, 2016; Parker, Blankenau, & Sydow, 2015; Pittenger & Doering, 2010; Whalen et al., 2010). A related variable in many studies was high school or college GPA, although many consider this variable to be behavioral rather than intellectual (Aragon & Johnson, 2008; Bean & Metzner, 1985; Bell, 2007; Boston, Gibson, & Ice, 2012; DesJardins & McCall, 2010; Hyllegard et al., 2008; Korkofingas & Macri, 2013; Morris, Finnegan, & Wu, 2005; Parker et al., 2015). This was often the variable with the strongest positive

effect (Brigman, 2016; Laugherman et al., 2015; Nakajima, Demob, & Mossler, 2012; Pruett & Absher, 2015; Wojciechowski & Palmer, 2005). Whalen et al. (2010); found that an increase of one point in cumulative college GPA equated to a 2000 percent increase in the six-year completion rate. Chen (2012) demonstrated that a single standard deviation increase in college GPA equated to a 41 percent decrease in attrition. DesJardins and McCall (2010) found that a one-point increase in college GPA led to a 77 percent decrease in the chance of stopping out and only nine percent of those who stopped out graduated. Parker et al. (2015) found that students in good Academic Standing (driven in large part by GPA) were over eight times more likely to persist. Rovai (2003) demonstrated that students matched to programs according to their learning style retained at higher rates. Conversely, Shaw et al.'s (2016) study on 2400 online students suggested that students with verbal and/or physical learning styles are less likely to persist and complete in those online programs.

Several studies identified positive social student variables. A recurring theme was the importance of sufficient time built into the adult student's busy schedule for school (Herbert, 2006; Koehnke, 2013; Pruett & Absher, 2015). Students who have or make the time for studying persist and complete at higher rates. Family and social support appeared as positive variables in a few studies (Kelly, LaVergne, Boone, & Boone, 2012; McGivney, 2004). One counterintuitive study found that students whose parents held Associate's degrees retained at statistically significant higher rates than those who held no degree or held higher degrees. Interestingly, students whose parents had Bachelor's degrees retained at 9.5 percent less and those whose parents had Master's degrees at 26.6 percent less than students did whose parents had no degrees (Pruett & Absher, 2015).

The most cited and most positively associated social variable concerned the student's social integration into the school community (Liu et al., 2007; Parker et al., 2015; Pruett & Absher, 2015; Rovai, 2003; Whalen et al., 2010; Wighting et al., 2008). Pruett and Absher found engagement in school activities to be the second-best predictor of retention out of ten variables (2015). For online students, this relationship presented itself most clearly in the correlation between student social presence and activity in the discussion forums with persistence, completion, and performance (Dixson, 2015; Spector, 2005; Wilson, Pollock, & Hamann, 2007). Whalen, Saunders, and Shelly found that first year students who belonged to formal learning communities retained at higher rates than those who did not. Specifically, "A non-learning community member was about 65.2 [percent] as likely to be retained as not retained, compared to a learning community member" (Whalen et al., 2010, p. 418). Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) determined the following:

> Student engagement in educationally purposeful activities during the first year of college had a positive, statistically significant effect on persistence, even after controlling for background characteristics, other college experiences during the first college year, academic achievement, and financial aid (as cited in Pruett & Absher, 2015, p. 36).

Several researchers developed models of retention/persistence with social integration playing a major role (Bean & Metzner, 1985; Kember, 1995; Rovai, 2003; Tinto, 1973). Although the models developed by Tinto, Bean, and Metzer pertained to traditional students, both Kember's and Rovai's models focused exclusively on nontraditional and online students.

Many studies evaluated the effects of student demographics on persistence and completion, but many researchers found no significant differences between the

demographic groups (Aragon & Johnson, 2008; Ice et al., 2011; Larson & Sung, 2009). Several studies identified positive demographic variables. A few of these demonstrated that female students persist and complete at higher rates than men do (Brigman, 2016; Hallawell, 2015; Lech, 2015; Parker et al., 2015; Whalen et al., 2010). However, a few studies also found no significant difference between genders (Inan et al., 2009; Kemp, 2002). Several other studies found significant differences between age groups, with younger students outperforming older students (Carr, 2000; Murtaugh et al., 1999; Packham et al., 2004; Tones, Fraser, Elder, & White 2009; Whittington, 1995; Xenos, Pierrakeas, & Pintelas, 2002). Others found no significant differences pertaining to age (Aragon & Johnson, 2008; Inan et al., 2009; Kemp, 2002; Park & Choi, 2009; Willging & Johnson, 2009), and McGivney (2004) reported that students in their mid-thirties outperformed their younger counterparts. The demographic that demonstrated the greatest statistical significance in the literature was ethnicity. White students persisted and completed at higher rates than minorities in almost every study (Chen, 2012; Hyllegard et al., 2008; Lech, 2015; Melguizo, Kienzl, & Alfonso, 2011; Nesler, 1999; Parker et al., 2015). However, Aragon and Johnson (2008) found no significant difference in completion rates associated with ethnicity (defined as white or non-white).

Researchers have also found student financial variables play a significant role in persistence and completion. The most obvious and commonly cited relationship is that students with sufficient financial resources persist and complete at higher rates (ACT, 2010; Bodvarsson & Walker, 2004; Davidson, 2015; Koehnke, 2013; Mcgivney, 2004; Melguizo et al., 2011; Olbrecht et al., 2016; Stinebrickner & Stinebrickner, 2004; Whalen et al., 2010). A related variable is financial aid. Several studies demonstrated that

students receiving scholarships, grants, loans, and/or work study funds persisted and completed at higher rates (Brigman, 2016; Chen, 2012; Curs & Harper, 2012; DesJardins & McCall, 2010; Mendoza, Horton, & Mendez, 2012; Nakajima et al., 2012; Pruett & Absher, 2015). Brigman (2016) found that grants positively predicted retention among students who were not first-generation students, but negatively predicted retention among students who were first-generation. Interestingly, Olbrecht et al. (2016) found a positive correlation between retention and amount of unmet financial need.

A few studies found geographic variables with significant correlations. Studies produced by both Murtaugh, Burns, and Schuster (1999) and Whalen, Saunders, and Shelley (2010) demonstrated higher rates of persistence for in-state students than out-of-state students. This supported the retention/persistence models stressing the importance of social integration with the school. Based on these findings, Lech (2014) suggested that, "Since online students were not physically connected to the institution, perhaps all online students should be considered out-of-state students" (p. 38). This might explain part of the reason why online students persist at lower levels. Parker et al. (2015) found that students from the urban area of Omaha/Lincoln Nebraska persisted at a rate only 64 percent that of students not from those urban areas. Even after isolating just the Caucasian students, those from the urban area persisted at lower levels.

Many researchers included emotional and/or volitional variables in their studies, and several identified significant variables. Researchers found that students' self-efficacy and self-confidence in their ability to succeed in the course/program correlated positively (Garriott, Hudyma, Keene, & Santiago, 2015; Koehnke, 2013; Lee, Choi, & Kim, 2012). Street (2010) demonstrated that self-efficacy was the most noted positive student attribute

found in her literature review. Two studies demonstrated that students with better self-regulation performed better (Artino, 2008; Lee, Choi, & Kim, 2012). Parker et al. (2015) provided support for student resilience and a sense of connectedness as positive variables. Two studies suggested that motivation to learn correlates positively (Johnson, Stewart, & Bachman, 2015; Wighting et al., 2008). A common negative variable found in the literature was the procrastinating personal attribute. Shaw et al. (2016) directly linked procrastination to attrition/withdrawal. Several studies indirectly indicated its negative influence through the proxy variable of late registration (Ford, Stahl, Walker, & Ford, 2008; Hale & Bray, 2011; Hallawell, 2015; Parker, 2015; Smith, Street, & Olivarez, 2002; Weiss, 1999). Law and Patil (2015) confirmed that exhaustion/student burnout correlated with higher rates of attrition/withdrawal. Assiter and Gibbs (2007) linked several variables with increased attrition: incompatibility with faculty/staff, dissatisfaction with course content/delivery, overall negative social experience, inability to cope with the demands of higher education (lack of resilience), and improper choice of degree program.

Much of the literature indicated that student behaviors while enrolled in nontraditional and online programs influence persistence and completion more than the inherent characteristics of the students. According to one study, students who fail their first course are less likely to persist to the next term (71 percent versus 84 percent persistence) (Yuen & Tsang, 2011). Similarly, students withdrawing from an individual course withdraw from school at higher rates (Boston, Gibson, & Ice, 2012). Aragon and Johnson (2008) found a positive correlation between the number of courses a student takes in a given semester and degree completion. A common behavioral theme found in

the literature is student engagement (Kuh et al., 2008). Student engagement in online discussions positively correlates with completion (Dixson, 2015; Spector, 2005; Wilson et al., 2007) and better grades (Cook & Germann, 2010; Davies & Graff, 2005; Kay, 2006; Ramos & Yudko, 2008). However, Song and McNary (2011) suggest engagement measurement in discussions should not be limited to the number of discussion posts. Related factors are post quality (Song & McNary, 2011), the number of days on which student logs in and/or posts (Arbaugh, 2014), time spent and activity in the online course shell (Boston et al., 2011; Korkofingas & Macri, 2013), and responses to classmates (Romanov & Nevgi, 2008). Although difficult to achieve in strictly online programs, several authors espoused the importance of social integration with school personnel and students (Liu et al., 2007; Pruett & Absher, 2015; Rovai, 2003; Tinto, 1973). Pruett and Absher (2015) additionally discovered that time spent studying correlated positively with retention, as did taking a developmental math course. However, taking developmental reading or writing courses correlated negatively with retention. This might indicate that students with below average math skills can complete a degree program more easily than students with below average reading and writing skills.

The final student variable category pertains to the individual's level of preparedness. Whereas the previous section highlighted behaviors exhibited while studying in higher education programs, this category generally pertains to their behaviors prior to enrollment in the online and nontraditional programs. Several studies demonstrated that students who academically prepared for college (by earning college credits in high school, community college, etc.) persisted and completed at higher rates than those who did not (Boston et al., 2011; Brigman, 2016; Johnson & Kreuzer, 2001;

Laugherman et al., 2015; Lynch 2011; Nesler, 1999; Whalen et al., 2010). Several researchers reached the same conclusions with the use of student readiness assessments (Dupin-Bryant, 2004; Gaide, 2004; Lorenzetti, 2005 as cited by Harrell & Bower, 2011). Academic preparation also translates into declaring a major, which Parker et al. (2015) reported as positively correlating with persistence. Nesler (1999) found that adult students with military experience completed at higher rates (seventy percent versus fifty-five percent). A key finding to the study at hand and the college's four-pronged strategy pertained to stopout. As previously mentioned, stopout refers to a temporary dropout. DesJardins and McCall (2010) reviewed the data of over twelve thousand traditional students and determined that just over nine percent of students who stopped out at least once completed, just over six percent of those who stopped out at least twice completed, and less than five percent of those who stopped out three times eventually completed. Students who prepare for online higher education by developing comfort with technology performed better in online programs according to Summers, Waigandt, and Whittaker (2005) and Whalen et al. (2010), as do those with prior online learning experience (Summers et al., 2005; Hachey et al., 2013).

Faculty. The second variable category correlated with student persistence and completion pertains to faculty. School faculty members play a significant role in not only educating students, but also helping them to persist and complete. The literature contains several faculty-related variables with significant effects. The core theme in online adult education pertains to what researchers call faculty or teaching presence. According to the Community of Inquiry model, three types of presence play important roles in online

learning: social presence, teaching presence, and cognitive presence. Teaching presence is similar to the concepts of social presence and cognitive presence, which usually refers to a student's behaviors and engagement with classmates, faculty, and content in online courses (Garrison et al., 2000). Teaching presence refers to the instructor's behaviors and engagement with the students in the online courses. As predicted by Moore (1973) in his theory on transactional distance, instructors with greater teaching presence have students that are more likely to persist and complete (Aksal, 2011; Arbaugh, 2014; Baker, 2010; Evans, 2009; Maor, 2008). Conversely, Alexander (2010) provided evidence that minimal contact with instructors correlated with higher levels of attrition. Several studies demonstrated positive correlations between the number and types of interactions between instructors and students with better student performance, including grades, persistence, and completion (Gahungu, Dereshiwsky, & Moan, 2006; Jackson, Jones, & Rodriguez, 2010; LaPrade, Marks, Gilpatrick, Smith, & Beazley, 2011; Lewis, 2010; Nash, 2005; Walker & Kelly, 2007). Several other researchers linked instructor participation in the discussion forums with student engagement (Artino, 2008; Dixson, 2015; Romanov & Nevgi, 2008). Additional variables associated with teaching presence that demonstrated positive correlations included the use of synchronous office hours (Santovec, 2004), effective discussion facilitation (Maor, 2008), use of the communication tools in the learning management system (Lemak et al., 2005), responsiveness to students (Bair & Bair, 2011; Herbert, 2006; Schubert-Irastorza & Fabry 2011), and positive relationships with students (Kelly et al., 2012). Additional faculty-related variables with positive correlations included teaching style match with student (Rovai, 2003), instructor

attractiveness (Liu & Tomasi, 2015), high quality feedback on assignments (Gahungu et al., 2006; Jackson et al., 2010; LaPrade et al., 2011; Lewis, 2010; Walker & Kelly, 2007).

Course. The literature contains numerous examples of course and program-related variables that influence persistence and completion. Course quality (Evans, 2009) and degree to which it facilitated social presence (Rovai & Whiting, 2005; York, Yang, & Dark, 2007) appeared as key, recurring themes. Research conducted by Koehnke (2013) and Alexander (2010) revealed that well-aligned course expectations correlate negatively with attrition/withdrawal. Similarly, Liu et al. (2007) found a strong positive correlation between the degree of academic integration and persistence. Pittenger and Doering (2010) found that good online course design positively correlated with completion, while technical issues and cognitive overload correlated negatively. Two studies demonstrated positive correlations for clarity of course design and course organization (Bair & Bair, 2011; Schubert-Irastorza & Fabry, 2011). Conversely, Packham et al. (2004) found that poor structure and inflexible online course design positively correlated with attrition. A good course experience positively correlated with persistence in Stanford-Bowers' (2008) study, and ranked as one of the top three most important persistence factors according to Kelly et al. (2012).

Research illustrated the importance of social presence with the use of online learning communities (Bonet & Walters, 2016; Santovec, 2004), frequent discussion post requirements (Lech, 2015), collaborative online writing assignments (Fredrickson, 2015), a facial expression recognition discussion activity (Kelly & Claus, 2015), use of word clouds in discussion forums (deNoyelles & Reyes-Foster, 2015), ARCS-based

motivational mass emails (Huett, Kalinowski, Moller, & Huett, 2008), engaging courses (Tinto, 2006), and a general sense of community within the online class (Bair & Bair, 2011; Schubert-Irastorza & Fabry, 2011). Outside of the two key themes of course design and social presence, several other miscellaneous, course-related variables emerged. Hyllegard et al. (2008) found that the amount of required reading correlated positively with attrition. According to five separate studies, the level of technical difficulty negatively correlated with persistence (Gahungu et al., 2006; Jackson et al., 2010; LaPrade et al., 2011; Lewis, 2010; Walker & Kelly, 2007). In other words, less reading and less technically difficult content correlated positively with persistence. Both of these factors seem to point toward a third, less influential theme pertaining to cognitive load. DeLotell, Millam, and Reinhardt (2010) found positive retention results with the use of deep learning strategies. Sargent, Borthick, and Lederburg (2011) demonstrated that ultra-short tutorials at the beginning of the course correlated positively with grades and persistence.

University. For the purpose of this study, the university or administrative variables are the most relevant. These are factors or variables over which the university administration has direct control. A consistent finding across the literature pertains to the benefits of universities providing an online orientation course at the beginning of an online higher education program. Yorke and Thomas's Retention Model (2003) provided a foundation in the literature for such orientations (see Appendix F). It emphasized the importance of supporting the students at the very start of their academic programs in the critical first year. Several studies found positive correlations between such orientation

programs and retention (Dray et al., 2011; Gilmore & Lyons, 2012; Howell et al., 2004; Koehnke, 2013; Lorenzo, 2011; Nash, 2005; Otte, 2007; Bailey, Jenkins, & Smith-Jaggars, 2015; Taylor et al., 2015; Wang, 2006). Several other studies positively linked the orientation courses to persistence (Carruth, Broussard, Waldmeier, Gauthier, & Mixon, 2010; Nichols, 2010; Wozniak, Pizzica, & Mahony, 2012) and negatively to attrition (Doggrell & Polkinghorne, 2015: Gilmore & Lyons, 2012). Other researchers isolated and tested specific elements of an online orientation course and linked them to positive outcomes. As previously mentioned, students who are technologically prepared or who have taken previous online courses persisted and completed at higher rates. Alexander (2010) demonstrated that the lack of technology skills pertinent to the university's online programs positively correlated with attrition. ACT (2010) demonstrated that overall retention rates improved for students taking freshmen seminars. Sutton (2014) found similar results when the mandatory orientation included an analytical writing component. Several studies positively linked procedures (such as orientation courses) that improved students' understanding of the requirements for academic success or helped align course expectations (Alexander, 2010; Anderson, 2008; Müller, 2008; Park, Perry, & Edwards, 2011). Wojciechowski and Palmer (2005) found that effective student orientation was the second-best predictor of student success. Another benefit of orientation is that it facilitates the early academic and social integration of vulnerable student populations, both of which were key components according to the models developed by Tinto (1973) and Rovai (2003).

In addition to orientation, university student services appeared often in the literature as linked to positive student outcomes (Ashby, 2004; Astin, 1993; Chen, 2012;

Dietz-Uhler et al., 2007; Evans, 2009; Garda, Patona, & Gosselina, 2012; McGivney, 2004; Reissman, 2013; Webber & Ehrenberg, 2009). Although, one study did negatively link university expenditures on student services with persistence and completion (Gansemer-Topf & Schuh, 2006), and two others found no correlation (Ryan, 2004; Titus, 2006). Several studies supported the positive role that high-quality Academic Advising plays (ACT, 2010; Bean & Metzner 1985; Gravel, 2012; Metzner, 1989), in particular their communication and interaction with students (Müller, 2008; Tait, 2004). The literature revealed several different specific student services with positive correlations and effects on persistence and completion. Nash (2005) and ACT (2010) linked free tutoring services to improved retention. Boyle, Jinhee, Ross, and Simpson (2010) found similarly positive results with mentoring programs. Two studies established the link between academic support and reduced attrition (Fozdar & Kumar, 2007; Herbert, 2006). Five different studies linked mental health student support services to retention (Garda et al., 2012; Gowen, Deschaine, Gruttadara, & Markey, 2012; Irvine, 2011; Petersen, n.d.; Sieben, 2011). Garriot et al. (2015) demonstrated positive results from environmental support (referring to the university environment). Shaw et al. (2016) found that universities can successfully intervene with at-risk students by identifying them with the SmarterMeasure software. This tool provides attrition risk scores for students based on several factors including individual personality attributes, life factors (time, support, finances), learning styles, technical competency/knowledge, and on-screen reading rate and recall (Shaw et al., 2016).

Another set of university-level variables concerns the technologies the school implements. Most universities now have Learning Management Systems (LMS). As

with any service or product, there are varying packages, options, levels of quality, learning curves, etc. Hachey et al. (2012) found that using an LMS with better structure, reliability, and accessibility led to higher retention rates. Kilburn, Kilburn, and Cates (2014) demonstrated that LMS availability led to a greater sense of perceived value among students, which led to greater loyalty and improved retention/persistence. Pittenger and Doering (2010) established that increased completion rates occur when schools train their faculty on how to use the LMS effectively. Similarly, Reissman (2013) found increased retention rates when schools trained their faculty on using the online systems, particularly to establish teaching presence. When the faculty effectively used Instructional Computer Technology (ICT), including email, instant messaging, threaded discussion forums, and video conferencing, they were able to better engage their students (Fillion & Ekionea, 2012). Arbaugh (2014) demonstrated that increased student engagement occurred when students perceived that the LMS was useful and easy to use.

An additional university-level category of variables pertains to financial aid. Several studies demonstrated positive correlations between increased student aid awards and persistence/retention (ACT, 2010; Chiyaka, Sithole, Manyanga, McCarthy, & Bucklein, 2016; Garda et al., 2012; Nakajima et al., 2012; Whalen et al., 2010). Herzog (2008) actually found different correlations based on the students' level of Estimated Family Contribution (EFC) among traditional freshmen. Financial aid need, type, and amount received was not correlated with retention among students with mid-level EFC. The amount of financial aid received among students with either low or high levels of EFC did correlate positively with retention. However, among the low EFC students, academic success was a stronger predictor of retention than financial aid received,

whereas among high EFC students, amount of financial aid received was a stronger predictor (Herzog, 2008). Chiyaka et al., (2016) found a strong, statistically significant inverse relationship between school loan default rate and retention rate. Olbrecht et al. (2016) demonstrated strong positive correlations between financial aid awards (particularly merit-based aid) and retention. DesJardins and McCall (2010) found strong evidence that awarding grants instead of loans correlated positively with completion. In most cases, the more it costs the student to persist and complete, the lower the rates. Aside from financial aid, a directly related variable is tuition cost. Hatton, Homer, and Park (2009) found a negative correlation between tuition cost and persistence.

Several other university-level variables affecting persistence and completion related to the size, type, and selectivity of the institution. Chiyaka et al. (2016) demonstrated that private institutions retain students at higher rates than public institutions, and that enrollment rate, acceptance rate, and student faculty ratio negatively correlated with retention. Three additional studies also found private schools to possess higher retention rates (Kim, 2007; Ryan, 2004; Titus, 2006). Chen (2012) found a negative correlation between attrition and both university size and selectivity. Larger schools and more selective schools had lower attrition rates, but the data was not statistically significant. Ryan (2004) and Titus (2006) did find statistically significant results showing that larger schools held lower attrition rates. Additionally, four studies successfully linked university selectivity with lower attrition (Kim, 2007; Ryan, 2004; and Titus, 2006). And lastly, a couple of studies demonstrated that the higher the percentage of classes taught by part-time faculty, the lower the retention (Ehrenberg & Zhang, 2005; Schibik & Harrington, 2004).

University Strategies

Universities acknowledged the need to improve retention and completion rates several decades prior to the birth of online programs and the explosive growth of nontraditional programs (Bean & Metzner, 1985; Tinto, 1973). Many of the studies published in the literature consist of retention program evaluations conducted by universities, special programs, accreditors, and departments within the schools. As evidenced in the literature, the retention models needed adjustments to better address the particular needs of online and adult (nontraditional) students (Kember, 1995; Lech, 2014; Rovai, 2003). The university-level variables play a powerful role in the strategies and models employed at the institutions. The study at hand reflects a persistence and completion program consisting of four university leadership-level strategic changes initiated at MMU under the guidance of the accrediting agency, the Higher Learning Commission.

HLC Persistence and Completion Academy

The Higher Learning Commission (HLC) is the university accrediting body responsible for the Midwestern United States. In an effort to help the schools it accredits consistently improve; it has initiated "Academies". According to its website, HLC explains the Academies as follows:

> The Academies are programs aimed at assisting HLC-accredited institutions to define, develop and implement comprehensive strategies for institutional improvement. Designed and led by experienced practitioners, the Academies provide a framework and guidance for developing customized projects. The programs are adaptive to the needs of the wide range of institutional types served by HLC and support improvement within the context of an institution's mission, vision and goals (The Academies, n.d. par. 1).

HLC offers one academy in assessment and another for persistence and completion. Schools accredited by the HLC applied for entrance into the academies. HLC selected fewer than ten schools of the approximately 100 applicants for its current, four-year cohort for the Persistence and Completion Academy; one of these is a mid-sized, Midwestern university (MMU), which is the focus of this study. During the first year of the cohort, HLC worked with university leadership to research strategies aimed at improving persistence and completion rates.

A Four-Pronged Strategy

School Participation Background

MMU consists of two colleges. One is the traditional, on-campus, four-year undergraduate college. The other college exclusively educates nontraditional, adult students, and offers most classes online. As of 2017, students took nearly 90 percent of their credit hours in the online sections, even when in-seat options were available. During its first year as a member of the HLC academy (2015), MMU engaged a consultant with expertise in adult and online higher education. He had previously worked with a school that is now approaching 100,000 online students. After a cyclical process of research and recommendations, the consultant and the university leaders agreed on four initiatives to implement in the nontraditional college to improve persistence and completion.

Strategy Prongs

The nontraditional college at the university implemented the four-pronged program aimed at improving persistence and completion at the beginning of 2016, in the spring trimester. This section elaborates on those four elements.

Restructured Academic Calendar. The first component of the four-part strategy was a restructuring of the academic calendar. Prior to the restructuring, the college had problems with courses from one trimester or block overlapping with courses in the subsequent block. Students and faculty struggled to complete the requirements for one block while beginning the next. Another problem with the old calendar was that there were no scheduled school breaks, such as fall, Christmas/winter, spring, and summer break. Students and faculty alike struggled with school-life balance and burnout. The restructured academic calendar resolved both of those problems by eliminating overlaps and scheduling weeklong breaks during the year that coincided with major holidays. The new calendar provided three accelerated blocks in each of three trimesters. The college believed that this strategy could reduce the attrition related to school-life balance and burnout.

Academic Achievement Scholarship. The second component of the college's program consisted of a financial award to students for persisting. Students who successfully passed courses in Blocks One and Two of a trimester (six credits or more across the two blocks), received a 50 percent tuition discount for courses taken in Block Three. In the spring of 2017, this was slightly modified to provide discounts on a rolling

schedule, rather than just limited to a single trimester. The modified award granted students a $100 discount per credit hour for continuous enrollment, contingent on successful completion of the classes.

The literature demonstrates clear connection between persistence/completion and sufficient funds (Hatton et al., 2009; Olbrecht et al., 2016). The college believed that the reduced tuition would motivate students to enroll in all three blocks of a trimester. Additionally, the school named the incentive the "Student Achievement Award." This nomenclature in itself appeals to an adult student's desire to earn an award rather than receive financial assistance. The college believed that the name of the incentive may be more motivating than a label like "Repeat Customer Discount." As previously mentioned, DesJardin & McCall's (2010) findings supported the benefits of awards over loans. The college aimed to reward and to reinforce steady persistence, which may eventually increase completion rates as well.

Adoption of New Financial Aid Model. The third prong of the strategy was a change in the financial aid model. The old model, called Scheduled Academic Year (SAY), dispersed funds for students according to term enrollment by academic year. The loan term corresponded to the school's academic calendar year (which usually starts with the fall semester). The SAY model fits the traditional students well, assuming they begin school at the beginning of the academic year. However, nontraditional students are likely to start during any of the trimesters. This is even more likely for schools with a block system. A student might not enroll until block three of the fall term, and then enroll in all blocks of the spring and summer terms. In that scenario, the SAY model would not cover

the student's tuition. Therefore, the college implemented a financial aid model called Borrower-Based Academic Year (BBAY). In this model, the student's loan term begins when the student begins and spans three quarters of the calendar year (for example: fall, winter, spring or winter, spring, summer). The student can then begin another loan term immediately after those three quarters end. The benefits of BBAY are that a) students gain loan eligibility more quickly (because the loan term begins when the student enrolls) and b) it can cover higher cost programs or programs with concentrated costs at particular times (Petersen, n.d.). The college believed that the BBAY model fit the needs of its nontraditional students more appropriately in the college's block and trimester system.

Online Orientation Course. The fourth component of the four-pronged strategy implemented by the college was an online orientation course. The research strongly supports the value of such a program in better preparing adult students for the academic program. The college added the course as a requirement for all incoming first semester students. A very small percentage of students received exemption due to substantial academic achievement at prior schools. The college titled the course "Adult Studies Seminar I" and offered a supplemental, but optional, Adult Studies Seminar II. The course introduced students to the learning management system, academic writing standards, student success strategies, efficient use of financial aid to finish programs, and the effective application of scriptural principles to school and life. The college believed that this orientation course would lessen the learning curve for those experiencing adult/online higher education for the first time.

Summary

This literature review summarized the key studies pertinent to persistence and completion in nontraditional higher education. It first established the growing importance and prevalence of the discipline within the educational system. It then clarified the challenges these programs face with student persistence and program completion rates. The bulk of the reviewed and summarized literature expanded upon the variables affecting these rates. This literature review identified dozens of variables and organized them into the following categories: student-related, faculty-related, course/program-related, and university-related. The university-related variables are ones over which an institution's upper levels of administration have direct control. Those are the variables most pertinent to the study at hand, which evaluated a four-pronged strategy implemented at one university to improve persistence and completion.

Although numerous studies demonstrated that there are variables under a university administration's control, none applied specifically to the multi-factored program at hand. This study was especially useful for several reasons. First, it isolated the results to nontraditional and online undergraduate students only. Many of the studies combined student groups or evaluated traditional students only. Second, the data produced in many of the studies was largely outdated, given the degree to which the nontraditional and online category of higher education has expanded and evolved since the turn of the millennium. This was especially the case for the retention models in the research (Bean & Metzner, 1985; Kember, 1995; Rovai, 2003; and Tinto, 1973). Third, this study was able to assess the overall difference in persistence rates after the college implemented the four prongs (by comparing 2016 and 2017 trimester rates to 2014 and

2015 trimesters). Fourth, through data analysis this study was also be able to filter and isolate the effects of the individual prongs (with the possible exception of the revised academic calendar). Fifth, this study triangulated through student surveys that specifically asked the students to weigh the impact of the initiatives on their decisions to persist and/or complete.

In summary, the administrative leadership enacted a four-part initiative at the beginning of the 2016 spring trimester with the purpose of improving persistence and completion rates in its college for nontraditional students. A restructured academic calendar with built-in breaks, a tuition discount that rewards persistence, a financial aid model better suited for nontraditional students, and an orientation course comprise the four prongs of the strategy. This study sought to assess the effectiveness of the strategy.

The next chapter (Three) explains the methods and procedures employed in this study to assess the effect that the four-pronged strategy had on persistence and projected completion rates, as well as the student perceptions on the influence of the strategy. Chapter Four presents the study findings and data analysis. Chapter Five provides a summary, discussion, and study implications.

Chapter Three

Procedures and Methodology

Introduction

The literature review conveyed that persistence and completion rates are key measures to success in higher education. The review also demonstrated the importance of nontraditional and online higher education as a major emerging segment of the educational system in the United States. Prior research identified many variables correlated with student persistence and completion. A few of the variables that positively correlated with persistence and completion were under the direct control of university leadership. Among these were providing orientation courses for all new students, sufficient financial aid, and factors limiting or contributing to work-life balance. Although nontraditional and online programs represent a significant and growing proportion of all enrollments, there was little research on the impact of university/institutional-related business decisions on persistence and completion. This study provided a closer examination of this confluence of important variables at a midsized, Midwestern university (MMU). This chapter presents the research and analysis procedures and methodology employed by the study. Specifically, the chapter first describes a theoretical model for increasing persistence and completion rates through organizational business/administrative decisions. It then explains the research paradigm and design, data collection procedures, and the statistical tests employed to test the model.

Research Paradigm

Based on the literature review, this study suggested a preliminary model for university leadership to quickly improve persistence and completion rates. The theoretical model is simply a combination of the three main administrative variables correlated with persistence and completion: orientation courses for new students, sufficient financial aid, and work-life balance. The addition of these positive factors should improve persistence immediately and completion in a few years (the time it takes for new students to complete their programs of study).

In order to test the proposed model, this study employed the quantitative research paradigm in answering the research questions and assessing the associated theoretical model because it provided more objective and deductive results. This study compiled data from two sources. The university's data warehouse, including information from the Student Information System (SIS) and the Learning Management System (LMS) provided persistence, completion, demographic, and academic variables for many different groupings of students and treatments (absence or presence of one or more initiatives). This data served to answer research questions one through five. Two custom surveys (Appendices C, D) provided student perception data on the impact of the individual initiatives. The survey data served to answer the sixth research question as well as to further support the findings for the first five questions.

Research Design

Because the study compared persistence rates, it employed a causal-comparative design to detect any differences that resulted. With as many comparable groupings as possible, student persistence rates among students benefiting from the initiatives were compared to those of students not receiving the benefits of those initiatives (whether it was students enrolled prior to implementation or students concurrently enrolled but not receiving the benefits). Groupings disaggregated students by demographics, degree, program, degree progress, semester, presence of one or more of the four initiatives, and any other meaningful categorizations allowed in the data. Such comparisons lent themselves to difference in proportions *Z* tests and independent samples *t*-tests for statistical analysis across groups (Spatz, 2007).

The research questions mentioned in Chapter One directed the data collection and analysis procedures. These research questions each targeted specific variables. Research questions one through five used the persistence rates as dependent variables. Research question six used the Likert means from the surveys as the dependent variables. The independent variables for each question were as follows:

1. Will a four-prong university business strategy produce statistically significant differences in student persistence and/or anticipated completion rates for students benefitting from those initiatives? The independent variable is the aggregate effect of the business decisions (tuition rebate award, BBAY financial aid model, revised academic calendar, and the student orientation course).

2. Will financial incentives for persistence (in the form of tuition rebates) produce statistically significant differences in persistence and/or anticipated completion rates for students benefitting from those incentives? The analysis limited the independent variable to just the presence or absence of the tuition rebate. The study compared the rates of students receiving the incentive to those not receiving the incentive.
3. Will changing the financial aid model (specifically to Borrower-Based Academic Year) produce statistically significant differences in persistence and/or anticipated completion rates for students using financial aid? The analysis limited the independent variable to just the presence or absence of the BBAY financial aid model. The study compared the rates of students that received the financial aid under the BBAY model to those who did not.
4. Will revising the academic calendar to eliminate course overlap and include weeklong breaks produce statistically significant differences in persistence and/or anticipated completion rates for students benefitting from the new calendar? The analysis limited the independent variable to just the presence or absence of the revised calendar. The study compared the rates of students prior to the calendar change to those after the calendar change.
5. Will an orientation course for new students produce statistically significant differences in persistence and/or anticipated completion rates for those new students? The analysis limited the independent variable to just the presence or absence of the orientation course. The study compared the rates of students

who had already completed the course to those taking the course and to those that never took the course.

6. Will students perceive that one or more of the four initiatives (tuition rebates, Borrower-Based Academic Year financial aid model, revised calendar, and online orientation) influences persistence or anticipated completion rates more drastically or more significantly? The study compared the mean Likert ratings for each initiative and disaggregated them across several variables to identify statistically significant differences between them. The study scored student rankings of the influence of the initiatives and statistically compared them.

Data Collection Sources

The research used data from two sources and analyzed them separately. The first source was the university's student data warehouse, consisting of data in the school's Student Information System (SIS) and the Learning Management System (LMS). Data analysts in the Business Intelligence department exported aggregate data reports that included persistence data from 2012 to 2017 for all undergraduate students in the nontraditional college at MMU. The general strategy with this data consisted of comparing rates for groups without the benefit of the four initiatives to groups with the benefit of the four initiatives. The study attempted to isolate initiatives for more effective analysis of each one or combinations of two or three initiatives. For example, one grouping filtered out students who benefited from the student orientation course and just assessed the effect of the other three initiatives. Another grouping compared students who did not use any financial aid, thereby filtering out the financial aid initiative. The Business Intelligence

team scrubbed the student identifiers from the data and submitted the raw aggregate data files to the primary researcher, who determined persistence rates across groupings and ran statistical tests on the results.

In an effort to clarify the effect of each initiative through data triangulation, this study pulled another data set from survey results. The surveys added the additional benefit of representing the students' direct perceptions of the four initiatives on their decisions to persist or complete. Two custom surveys, based partially on the persistence survey created by Davidson, Beck, & Milligan (2009), were created to further delineate the effects of each initiative (Appendices C, D). Students who were not completing their program/degree of study would complete the Persistence Survey (Appendix C). Students finishing their program/degree would take the Completion Survey (Appendix D). The surveys were disseminated in the school Learning Management System (LMS) for five points of extra credit in the class containing the survey. All non-terminal, undergraduate courses in the summer 2017 term offered the Persistence Survey, with the exception of courses in the Nursing program. Each section of the class contained the survey in the final session of the course shell. All non-nursing capstone courses (the terminal courses for the academic program) contained the Completion Survey, in order to limit the sample to students who had successfully completed their program of study.

Students had to agree to the consent form terms linked to the survey (see Appendix B) by typing their names and the date on the survey (Appendices C, D). The study disregarded surveys without this written consent. The Business Intelligence team scrubbed the student identifiers from the data and submitted the raw survey data to the primary researcher, who then tallied Likert means for each initiative (survey items A-D)

as well as frequencies of each initiative (survey items E, J). Additional survey items F, G, H, and I gathered supplemental data that seemed likely to correlate with the initiatives. The goal was to use data from at least 500 students on each survey. Ideally, sufficient numbers of survey respondents would provide a sample reflective of the overall student population at the school, which the study assumed to be reflective of the overall non-traditional undergraduate student population in the United States, as well as the overall adult demographics of the country.

Prior to mass implementation, the study validated both surveys through multiple testings of the same pilot groups of 40 and 54 randomly selected students. This study piloted the Persistence Survey among only those students who were not completing their degrees or programs during the block. The study piloted the Completion Survey among only those students completing their degrees or programs during the block. The pilot process included a re-administration of the surveys three to five weeks after students completed the first survey. This study compared the scores of each student from the first time they completed the survey to the second time. Preferably, student responses to all survey items would result in a test-retest reliability of .8 or higher. At the minimum, use of the surveys required an aggregate test-reliability of .8 for each survey.

Research Participants. All research participants were current or previous undergraduate students in the nontraditional college at Midwestern Mountain University (MMU). Descriptive statistics demonstrate the diversity of the student body. The following table presents a snapshot of undergraduate, nontraditional students enrolled in a course in block one of the spring terms in 2012-2017. The current ethnic/racial makeup

of the student body reflects that of the United States as a whole. According to the 2010 census, 63.7 percent of the country's population is white, 16.3 percent are Hispanic/Latino, and 12.6 percent are black. The 2017 demographic breakdown of nontraditional undergraduates at MMU is 58.7 percent white, 16 percent Hispanic/Latino, and 17.6 percent black. Nationally and at MMU the other ethnicities/races comprise approximately the remaining 7 to 8 percent (Humes, Jones, & Ramirez, 2011). The following demographic tables also display the percentages by gender, residency, and use of the Pell Grant across the six years. The percentage of female students ranged from 67 to 70 percent. Although this is much higher than the national ratio, it is reflective of the trend in higher education toward higher proportions of female students (Doherty, Willoughby, & Wilde, 2016). According to Autor and Wasserman (2013), females born in 1975 are 17 percent more likely than their male counterparts to attend college and 23 percent more likely to graduate. Table 1 provides the overview of this student demographic data.

Table 1: Student Demographics

Category	Block One, Spring Term of Year											
	2012		2013		2014		2015		2016		2017	
American/Alaskan	41	2.4%	60	3.2%	64	3.2%	75	3.4%	99	3.7%	104	4.1%
Asian/Pacific Isl.	48	2.8%	47	2.5%	63	3.1%	69	3.1%	75	2.8%	75	3.0%
Black	141	8.2%	187	10.0%	239	11.9%	286	13.0%	471	17.7%	446	17.6%
Unknown/Blank	99	5.7%	81	4.3%	57	2.8%	28	1.3%	88	3.3%	14	0.6%
Hispanic	188	10.9%	253	13.5%	263	13.1%	304	13.9%	361	13.6%	406	16.0%
White	1212	70.1%	1248	66.5%	1324	65.9%	1431	65.3%	1564	58.8%	1486	58.7%
Female	1166	67.4%	1317	70.2%	1431	71.2%	1534	69.9%	1836	69.1%	1813	71.6%
Male	563	32.6%	559	29.8%	579	28.8%	659	30.1%	822	30.9%	718	28.4%
In-State	1151	66.6%	1206	64.3%	1200	59.7%	1202	54.8%	1320	49.7%	1259	49.7%
Out of State	578	33.4%	670	35.7%	810	40.3%	991	45.2%	1338	50.3%	1272	50.3%
Received Pell	770	44.5%	887	47.3%	934	46.5%	1081	49.3%	1205	45.3%	1457	57.6%
Did not Receive	959	55.5%	989	52.7%	1076	53.5%	1112	50.7%	1453	54.7%	1074	42.4%
Total	1729	100%	1876	100%	2010	100%	2193	100%	2658	100%	2531	100%

The majority of undergraduate students in the nontraditional college of MMU pursue bachelor's degrees. This percentage has exceeded 74 percent in each year from 2012 to 2017. The percentage of students pursuing associate's degrees has steadily increased from five percent in 2012 to 22 percent in 2017. See Table 2 for counts and percentages of students by declared degree from 2012 to 2017.

Table 2: Declared Degree of Study

Declared Degree	Block One, Spring Term of Year											
	2012		2013		2014		2015		2016		2017	
Associate of Arts	64	3.7%	84	4.5%	96	4.8%	165	7.5%	232	8.7%	209	8.3%
Assoc. of Science	22	1.3%	95	5.1%	177	8.8%	247	11.3%	343	12.9%	347	13.7%
Bachelor of Arts	249	14.4%	226	12.0%	258	12.8%	276	12.6%	374	14.1%	350	13.8%
Bach. of Science	1222	70.7%	1297	69.1%	1334	66.4%	1376	62.7%	1585	59.6%	1581	62.5%
Certificate/Unknown	172	9.9%	174	9.3%	145	7.2%	128	5.8%	124	4.7%	44	1.7%
Total	1729	100%	1876	100%	2010	100%	2193	100%	2658	100%	2531	100%

Each year MMU adds new programs to its catalog. Table 3 groups these programs into six categories for comparison and trend analysis. The most rapidly growing program enrollments are in Business and Technology, Nursing and Healthcare Administration, and Psychology and Communication, representing about two thirds of the undergraduate adult student body.

Table 3: Declared Programs of Study

Declared Program	Block One, Spring Term of Year											
	2012		2013		2014		2015		2016		2017	
Biblical Studies, Ethics	153	8.8%	169	9.0%	229	11.4%	302	13.8%	436	16.4%	391	15%
Business & Tech.	260	15.0%	282	15.0%	301	15.0%	352	16.1%	454	17.1%	511	20.2%
Management	342	19.8%	303	16.2%	266	13.2%	238	10.9%	224	8.4%	193	7.6%
Other*	369	21.3%	411	21.9%	363	18.1%	337	15.4%	360	13.5%	262	10.4%
Nursing, Healthcare Admin.	326	18.9%	372	19.8%	449	22.3%	537	24.5%	672	25.3%	650	25.7%
Psychology, Communication	279	16.1%	339	18.1%	402	20.0%	427	19.5%	512	19.3%	524	20.7%
Total	1729	100%	1876	100%	2010	100%	2193	100%	2658	100%	2531	100%

*Other includes Criminal Justice, Education, General Studies, Non Degree Seeking, Undeclared

Research Instruments. As previously mentioned, this study combined SIS and LMS student data with custom student survey data. The study developed two similar, short surveys for students to complete for five points of extra credit. Each survey specifically asked students to rate the impact of each of the four university initiatives on their decisions to persist or complete their programs at MMU. The starting point for the surveys was the College Persistence Questionnaire (Davidson, Beck, & Milligan, 2009). The study modified the questionnaire by removing irrelevant questions and adding similar Likert scale questions for each initiative (survey questions A, B, C, and D). Question E asked students to rank the top five factors on their decisions to persist or complete. These factors included the four initiatives as well as the other major factors attributed to persistence and completion in the literature: A) Tuition Discount; B) Adult Studies Seminars; C) Revised Academic Calendar; D) Financial Aid Model; E) Academic Advising/Support; F) Service Central; G) Faculty; H) Quality of Education; I) Online Format; and J) Christ-centered Focus. Questions F through I on the Persistence Survey asked students to rate (using Likert scales) the following: F) How confident are you that this is the right school for you?; G) How much loyalty do you feel to this school, based on your experiences here?; H) How likely is it that you will take courses at this school next semester?; and I) How likely is it you will earn a degree from this school? Questions F and G on the Completion Survey asked students to rate (using Likert scales) the following: F) Do you anticipate returning to school for additional certifications or degrees in the future?; and G) How likely is it that you will return to this school? Questions J on the Persistence Survey and H on the Completion Survey asked students to select and rank the top three influences on their decision to stopout or dropout, either

actual or theoretical. Influence options were as follows: A) Personal financial reasons; B) School financial reasons (financial aid, costs, etc.); C) Work/family obligations; D) Transfer to other school; E) Burnout - need extended break; F) Health-related reasons; G) Only wanted to take a few classes; H) No longer need/want the degree; and I) Other Reason(s).

Survey Creation. The starting template for the surveys was the College Persistence Questionnaire (Davidson, Beck, & Milligan, 2009). The study selected and modified the most relevant questions as they pertained to the four-pronged initiative. It then presented the preliminary surveys to the members of the HLC Persistence and Completion Academy team at MMU, who then selected and modified the most relevant questions. The team, serving as an expert panel, consisted of the following personnel: Vice President - Academic Affairs of the College of Undergraduate Studies, Vice President – Academic Administration of the College of Adult and Graduate Studies, Vice President – Student Success of the College of Adult and Graduate Studies, Senior Manager - Application Software Info Systems and Technology, Business Intelligence Manager, Business Intelligence Analyst, Administrative Assistant to the VP of Student Success, and Sr. Instructional Designer. This process was repeated several times before the team approved the surveys completely.

Survey Validation. Once the team approved the surveys, the piloting process began for validation purposes. The initial pilot consisted of two administrations of the same Persistence Survey. For the first administration, Student Success Advisors

contacted students at random and asked them to complete the survey, either over the phone or by email. The students then received the same surveys a month later through Survey Monkey, which is an automated survey process. A regression test comparing the survey responses on the Likert-scale items (A-D, F-I) from the first to the second survey revealed that the implementations were statistically related, (r [270] = .78, $p < .01$). However, the threshold for test/survey validity is .80 (Spatz, 2007). Additionally, although the regression correlation for all Likert-scaled survey items combined equaled .78, some of the items had individual regression correlations below .70. Based on the results, the instructions were modified and clarified, as well as the question wording on questions B, D, and E on both the Persistence and Completion Surveys. The new wording focused students specifically on the initiatives, rather than the broader constructs of orientation courses in general and financial aid. The study also hypothesized that the difference in formats between the first and second administration contributed to the insufficient results. A second pilot was then conducted on the revised versions of both surveys. Unlike the first pilot, the second pilot administered the test and re-tests in the same format, through the university's learning management system (LMS). The study selected three non-terminal courses at random (Photography I, Lifespan Psychology and Development, and Introduction to Healthcare Informatics) and inserted the Persistence Survey in the second and fifth weeks of the course shells. The study then chose four terminal courses at random (Business Capstone Project, Psychology Senior Seminar, Biblical Studies Capstone, and Nursing Capstone Integration: Professional Transformation) and inserted the Completion Survey in the second and fifth weeks of the course shells. Instructions for both surveys asked students to complete the survey twice,

in the second week and the fifth week, for five points of extra credit. Forty-eight students completed the Persistence Survey in the second week. Forty students completed it a second time in the fifth week, producing a survey persistence rate of 83.3 percent. Fifty-five students completed the Completion Survey in the second week. Fifty-four students completed it again in the fifth week, producing a survey persistence rate of 98.2 percent.

The data analysis of the piloted survey consisted primarily of regression tests on the Likert-scaled items on each survey (A-D, F-I on the Persistence Survey and A-D, F-G on the Completion Survey). All eight Likert items combined on the Persistence Survey produced a statistically valid regression correlation, (r [318] = .86, $p < .001$). All six Likert items combined on the Completion Survey also produced a statistically valid regression correlation, (r [322] = .83, $p < .001$) (Spatz, 2007).

Question E on each survey asked students to select five of the ten listed variables and rank them one through five. For each student, the data analysis scored the top five ranked variables as five, four, three, two, and one; and the rest of the variables as zero. The scores for all students were added together to create total scores for each variable. Based on the score values, the variables were then ranked one through ten. The next phase of analysis consisted of Spearman's r_s ranked-order correlation tests on the rankings for each survey, revealing strong correlations from test to re-test. For the rankings on the Persistence Survey the results indicated statistically significant correlation, (r_s [10] = .915, $p < .01$). The results of the Completion Survey rankings for Question E demonstrated even higher correlations, (r_s [10] = .988, $p < .01$). Question J on the Persistence Survey and Question H on the Completion Survey also asked students to rank variables. Students selected and ranked the top three out of nine variables. The

data analysis scored the top ranked variables with three, two, and one point, while unselected variables received zero points. The scores for all students were added together to create total scores for each variable. Based on the score values, the variables were ranked one through nine. The next step was conducting a Spearman's r_s test on the rankings for each survey, revealing strong correlations from test to re-test. For the Question J rankings on the Persistence Survey, the results demonstrated a statistically significant correlation between test and re-test: (r_s [9] = .9, p < .01). The results of the Completion Survey rankings for Question H also demonstrated statistically significant results: (r_s [9] = .97, p < .01). These overall regression and Spearman's r_s results signify statistically valid surveys (Spatz, 2007). Table 4 presents the results of these regressions.

Table 4: Spearman's r_s Results of Second Survey Pilot

	Persistence Survey	Completion Survey
Question E	r_s [10] = .915, p < .01	r_s [10] = .988, p < .01
Question H	Not Applicable	r_s [9] = .97, p < .01
Question J	r_s [9] = .9, p < .01	Not Applicable

The analysis also included question by question regression correlations for the Likert questions on the surveys. This granular evaluation exposed the least consistency with Question D on the Persistence Survey, (r [38] = .63, p < .001). This is to be expected because of the complexity of the construct. It attempts to assess only the impact of the BBAY financial aid model, as opposed to financial aid in general. One can infer that many students did not clearly understand the distinction. It is also likely that many students completing the Persistence Survey enrolled after the implementation of BBAY and have nothing to which to compare it. The results of the same regression on the Completion Survey seems to support this logic, (r [52] = .8, p < .001) (Spatz, 2007).

Students taking the Completion Survey were in their final course. Most of these students started their academic program prior to the implementation of BBAY in 2016. Their more consistent responses to Question D suggest a better understanding of the distinction made between BBAY and the standard financial aid model (SAY). Table 5 displays the regression results of the second pilot test on the surveys.

Table 5: Regression Results of Second Survey Pilot

	Persistence Survey	Completion Survey
Students Completing the Survey Twice	40	54
# of Likert-Scaled Questions	8	6
Regression Scores of All Likert Items	r [318] = .86, p < .001	r [322] = .83, p < .001
Question A	r [38] = .89, p < .001	r [52] = .80, p < .001
Question B	r [38] = .89, p < .001	r [52] = .83, p < .001
Question C	r [38] = .80, p < .001	r [52] = .75, p < .001
Question D	r [38] = .63, p < .001	r [52] = .80, p < .001
Question F	r [38] = .80, p < .001	r [52] = .77, p < .001
Question G	r [38] = .73, p < .001	r [52] = .89, p < .001
Question H	r [38] = .72, p < .001	Not Applicable
Question I	r [38] = .97, p < .001	Not Applicable

The study endeavored to answer the Research Questions presented in Chapter One by combining the results of the two sets of data (student performance results pulled from the data warehouse and survey results). Due to the difficulty in isolating the effect of each initiative (the school implemented all four in the same semester), the addition of the survey data provided supplemental information from the perspectives of the students on how much each initiative impacted their decisions to persist/complete. The hope was that the two sets of data complement and support one another, thus providing more compelling results. The study hypothesized that one or more of the business initiatives implemented by the university correspond with significantly different persistence and/or completion rates among students partaking in those initiatives. The study expected that

students would perceive an initiative or two as more influential on their decisions to persist/complete than the other initiatives. A confluence of university persistence data with student perception data pointing to the significance of one or two initiatives provided more compelling support.

Data Analysis Techniques

The study used two sets of data and analyzed them separately. The Business Intelligence (BIT) team extracted student performance data from the school's Student Information System (SIS) and the Learning Management System (LMS). This team compiled flat files that facilitated the aggregation and disaggregation of the data by a multitude of variables, such as demographics, semester, course, students' numbers of credits earned, program of study, financial aid, grades, transfer credits, and many more according to the needs of this study. The primary researcher compared groups of students using various combinations of variables in the effort to determine significant differences in persistence rates. Specifically, the analysis attempted to compare groups of students benefitting from one or more of the four initiatives (tuition rebates, Borrower-Based Academic Year financial aid model, revised calendar, and online orientation) to groups not benefitting from them. The study employed the differences in proportions *Z* test for such comparisons, as well as other tests such as *t*-tests for paired samples and ANOVA for comparisons of three groups or more (Spatz, 2007).

The BI team also extracted from the LMS the data from the persistence and completion surveys. After removing student identifier data for anonymity, the BI team sent this data to the study for analysis. Analysis included Likert descriptive statistics for

each initiative (survey items A-D, F-I) as well as rank frequencies of each initiative (survey items E, J). Deeper statistical analysis included tests such as ANOVA, independent samples *t*-tests, and *Z* tests (Spatz, 2007).

Summary

The literature review demonstrated the expansion and influence of nontraditional and online higher education. Given that persistence and completion are so integral to the goals of the educational system, it is valuable to study these measures among the growing nontraditional and online segments. The review revealed several university level variables correlated with student persistence and completion rates. The university-level variables are especially important to the administrative and business leaders of the universities because they represent university factors directly under the leaders' control. That makes these variables ideal for top-level strategies aimed at improving school-wide persistence and completion rates.

No published studies available at the time of this review examined the effects of research-based persistence and completion improvement strategies in exclusively nontraditional and online programs. This study sought to reveal the effectiveness, or at least statistical significance, of one school's four-pronged strategy predicated on the university level variables identified in the literature review. Chapter Four presents the results of the research and data analysis. Chapter Five discusses the practical significance of the findings.

Chapter Four

Research Findings

Introduction

This chapter presents the statistical results of the multi-faceted causal-comparative study assessing whether university business decisions can improve the persistence and completion rates of nontraditional and online undergraduate students. As introduced in Chapter One, this study sought to determine if: 1) a four-prong university business strategy produces statistically significant differences in student persistence and/or anticipated completion rates for students benefitting from those initiatives; 2) financial incentives for persistence (in the form of tuition rebates) produce statistically significant differences in persistence and/or anticipated completion rates for students benefitting from those incentives; 3) changing the financial aid model (specifically to Borrower-Based Academic Year) produces statistically significant differences in persistence and/or anticipated completion rates for students using financial aid; 4) revising the academic calendar to eliminate course overlap and include weeklong breaks produces statistically significant differences in persistence and/or anticipated completion rates for students benefitting from the new calendar; 5) an orientation course for new students produces statistically significant differences in persistence and/or anticipated completion rates for those new students; and 6) students perceive that one or more of the four initiatives (tuition rebates, Borrower-Based Academic Year financial aid model, revised calendar,

and online orientation) impacts anticipated persistence or completion rates more drastically or more significantly.

In order to answer the research questions, the study combined student performance data from the university learning management system (LMS) and student information system (SIS) with student perception data from surveys. Non-completing, enrolled students responded to the Persistence Survey (Appendix C). Completing students (enrolled students currently in their final term) responded to the Completion Survey (Appendix D). The performance data extracted from the LMS and SIS provided actual persistence rates along with a myriad of other aggregate and disaggregated demographic and performance data.

Research Analysis

Research Question 1. Will a four-prong university business strategy produce statistically significant differences in student persistence and/or anticipated completion rates for students benefitting from those initiatives?

The study evaluated student data from 2012 through the summer 2017 term. Overall student persistence rates for all undergraduate students in the nontraditional college prior to the implementation of the four initiatives remained in the mid to upper 60s, from a low of 64.5 percent to a high of 69.3 percent. The initiatives went into effect in the spring 2016 term. In that calendar year, the persistence rates climbed to 71.2 percent in the spring, to 74.8 percent in the summer, and up to nearly 77 percent in the fall. Table 6 presents these persistence rates by year and term.

Table 6: Persistence Rates by Year and Term

Academic Term	Calendar Year					
	2012	2013	2014	2015	2016	2017
Spring	68.2%	66.0%	68.2%	68.1%	71.2%	74.5%
Summer	67.1%	67.3%	65.3%	64.5%	74.8%	77.5%
Fall	68.0%	68.8%	65.3%	69.3%	77.0%	

In order to statistically evaluate the results, the data analysis included several differences in proportions *Z* tests. The first comparison assessed persistence rates in all terms from 2012 through 2015 combined against the combined rates for the three 2016 terms. The differences in proportions *Z* test determined a statistically significant increase from the overall rate for the four years prior to the initiatives ($P = .67$) to the first year of the initiatives ($P = .75$), ($z = 19.48$, $p < .001$, two-tailed). The second test compared just the 2015 persistence rates to the 2016 rates. The differences in proportions *Z* test determined a statistically significant increase from the rate in the year prior to the initiatives ($P = .675$) to the first year of the initiatives ($P = .75$), ($z = 14.31$, $p < .001$, two-tailed). The study then repeated these tests using 2017 spring and summer persistence rates instead of 2016 rates. The differences in proportions *Z* test determined a statistically significant increase from the overall rate for the four years prior to the initiatives ($P = .67$) to the second year of the initiatives ($P = .76$), ($z = 21$, $p < .001$, two-tailed). The next test compared just the 2015 persistence rates to the 2017 rates. The differences in proportions *Z* test determined a statistically significant increase from the rate in the year prior to the initiatives ($P = .675$) to the second year of the initiatives ($P = .76$), ($z = 16.1$, $p < .001$, two-tailed). Table 7 reports the results of these Z tests.

Table 7: *Z* Scores of Differences in Persistence Rates

Calendar Year(s)	2016 (P = .75)	2017 Spring & Summer (P = .76)
2012-2015 (P = .67)	z = 19.48, p <.001	z = 21, p <.001
2015 (P = .675)	z = 14.31, p <.001	z = 16.1, p <.001

The study evaluated the persistence rates at MMU according to a number of variables. Many of these do not directly answer the research questions and have therefore been added as appendices. For a detailed disaggregation of the persistence rates along the dimensions of universal, higher education student variables, see Appendix H.

Research Question 2. Will financial incentives for persistence (in the form of tuition rebates) produce statistically significant differences in persistence and/or anticipated completion rates for students benefitting from those incentives?

Students only received the Student Achievement Award (SAA) if they persisted, therefore comparing rates between those who received it and those who did not would have been unfruitful. Because of this, the comparison needed to be between students without access to the award and students with access to the reward. Students without access to the award include students enrolled prior to 2016 (when the administration implemented the SAA), and students with categorical disqualifiers. The disqualifiers consistent in 2016 and 2017 were active military students and students with veteran status.

From 2012 to 2015, the combined persistence rates of military and veteran students was 70.93 percent compared to all other students' at 66.42 percent. From the spring of 2016 through the summer of 2017, the combined persistence rates of military

and veteran students was 73.21 percent compared to all other students' at 79.86 percent. In other words, the student persistence rates for those eligible for the SAA (and therefore more likely to be motivated by it) increased by more than students categorically ineligible for the SAA (military/veteran). Persistence rates for students eligible for the SAA improved from 66.42 percent to 79.86 percent, an increase of 13.44 percent. Persistence rates for students who were ineligible for the SAA (and therefore less likely to be motivated by it) increased from 70.93 percent to 73.21 percent, an increase of only 2.28 percent. To assess the statistical significance of the improvement in persistence rates, the study conducted differences in proportions *Z* tests. The differences in proportions *Z* tests found that the improvement in persistence for students eligible for the SAA before (*P* =.6642) and after its implementation (*P* = .7986) demonstrated very high statistical significance ($z = 27.34$, $p < .001$, two-tailed). The same test demonstrated less statistical significance in the change in persistence rates for those ineligible for the SAA before (.71) and after (.73) its implementation ($z = 3.06$, $p < .01$, two-tailed). Table 8 reports the persistence data regarding the SAA.

Table 8: Persistence Rates by Eligibility for Student Achievement Award

	Prior to SAA 2012-2015	With SAA 2016-2017	Difference	*z* score	*p*-value
Eligible for SAA	66.42%	79.86%	+13.44%	27.34	$p < .001$
Ineligible for SAA	70.93%	73.21%	+2.28%	3.06	$p < .01$

The study isolated the SAA impact versus the other three initiatives by limiting the groups to students who did not receive financial aid from the Borrower-Based Academic Year (BBAY) financial aid or take the new Orientation Course. The Revised Academic Calendar changed for all students at the same time. Students eligible for the

SAA who did not take the Orientation Course or accept Standard Academic Year (SAY) financial aid in 2012-2015 persisted at 65.37 percent. Students ineligible for the SAA who did not take the new Orientation Course or accept financial aid in 2012-2015 persisted at 68.40 percent. Students eligible for the SAA who did not take the Orientation Course or accept BBAY aid in 2016 or 2017 persisted at 69.32 percent. Students ineligible for the SAA who did not take the Orientation Course or accept BBAY financial in 2016 or 2017 persisted at 65.38 percent. In other words, when isolating for the impact of the SAA and calendar change, persistence among students impacted by the SAA and calendar change improved from 65.37 percent to 69.32 percent. Whereas, persistence among students impacted by only the calendar change (other 3 variables isolated out) dropped from 68.40 percent to 65.38 percent. Table 9 reports these rates.

Table 9: Persistence Rates of Students without Orientation Course or Financial Aid

	Prior to SAA or Calendar 2012-2015	With SAA & Calendar 2016-2017	Difference	*z* score	*p*-value
Eligible for SAA	65.37%	69.32%	+3.95%	6.36	$p < .001$
Ineligible for SAA	68.40%	65.38%	-3.02%	2.73	$p < .01$

To assess the possibility that a confounding variable influenced the military or veteran student population to drop slightly in persistence, the study then split the SAA Ineligible group into two subgroups, veteran and active military. The study then made the same calculations on each subgroup. The veteran subgroup persistence rate dropped from 80.3 percent prior to the initiatives to 78.25 percent after the initiatives. The differences in proportions *Z* test demonstrated no statistical significance in the change in persistence rates for veterans who were ineligible for the SAA before (.803) and after

(.7825) its implementation ($z = 1.66$, $p > .05$, two-tailed). The same test demonstrated slight statistical significance in the change in persistence rates for active military ineligible for the SAA before (.508) and after (.462) its implementation ($z = 2.50$, $p < .05$, two-tailed) but no significance at the .01 level ($p > .01$). Therefore, neither subgroup disproportionately skewed the results. Table 10 reports these results.

Table 10: Persistence Rates of Students without Orientation Course or Financial Aid by SAA Eligibility

	Prior to SAA or Calendar 2012-2015	With SAA & Calendar 2016-2017	Difference	*Z* Score	*p*-value
Eligible for SAA	65.37%	69.32%	+3.95%	6.36	$p < .001$
Ineligible for SAA - Vet	80.31%	78.25%	-2.06%	1.66	$p > .05$
Ineligible for SAA - Mil	50.78%	46.17%	-4.61%	2.50	$.05 < p > .01$

Question A on the Persistence Survey asked students to rate the influence of the SAA Tuition Rebate on their decision to persist into the next block. A total of 4,779 surveys yielded a mean rating of ($M = 3.66$) regarding the influence of the rebate. A rating of three represents "Moderate Influence" and four represents "Moderately High Influence." The study disaggregated these mean ratings by the students' SAA status in order to isolate significant group differences. SAA status divides the students into three groups: those who received the SAA, those who did not but were categorically eligible, and those who did not and were categorically ineligible (military and veteran). The 2,765 responses from students receiving the SAA rated it at an average influence of ($M = 3.91$). The 1,231 responses from students not receiving it but eligible rated the SAA at an average influence of ($M = 3.70$). The 514 responses from students who were ineligible

for the SAA rated it at only (*M* = 2.44). The study converted these means into proportions by dividing them into the maximum of 5.0. Differences in proportions *Z* tests revealed statistically significant differences in each of the three comparisons. The first differences in proportions *Z* test demonstrated that students receiving the SAA (*M* = 3.91, *P* = .782) rated the SAA as more influential than those not receiving it but eligible (*M* = 3.70, *P* = .740) at a statistically significant difference ($z = 2.8$, $p < .01$). The second differences in proportions *Z* test demonstrated that students receiving the SAA (*M* = 3.91, *P* = .782) rated the SAA as much more influential than those not receiving and ineligible for it (*M* = 2.44, *P* = .488) at a statistically significant difference ($z = 12.6$, $p < .001$). A third difference in proportions *Z* test demonstrated that students not receiving the SAA but eligible for it (*M* = 3.70, *P* = .740) rated the SAA as much more influential than those not receiving and ineligible for it (*M* = 2.44, *P* = .488) at a statistically significant difference ($z = 12.6$, $p < .001$). Table 11 reports the results of these *Z* tests.

Table 11: Student Ratings of SAA Influence on Persistence

SAA Status	Received SAA (*M* = 3.91)	No but Eligible (*M* = 3.70)
No but Eligible (*M* = 3.70)	$z = 2.8$, $p < .01$	
No, Categorically Ineligible (*M* = 2.44)	$z = 12.6$, $p < .001$	$z = 9.9$, $p < .001$

Question A on the Completion Survey asked students to rate the influence of the Tuition Rebate on their decision to complete their programs of study at MMU. A total of 54 responses to this question resulted in a mean rating of (*M* = 3.26). This places the mean rating between “Moderate Influence” (3) and “Moderately High Influence” (4). The study disaggregated these mean ratings on several variables in order to isolate significant group differences. As mentioned previously, the study then compared

students who received the rebate (Student Academic Achievement award) in 2017 to those who did not. Students receiving the rebate in 2017 rated the influence of it on their completion as (M = 3.51) compared to a mean of only (M = 2.6) for students not receiving it. An independent samples t-test demonstrated that the difference between the mean for students receiving the rebate in 2017 (M = 3.51) over those who did not (M = 2.6) was statistically significant (t [52] = 2.1, $p < .05$, two-tailed). Although some noticeable differences appeared, none of the other Likert questions on the Completion Survey produced statistical significance when comparing students receiving the rebate in 2017 to those who did not. Table 12 presents these completion influence ratings.

Table 12: Likert Ratings on Completion by Receipt of 2017 SAA

	Mean Rating (1-5)		# of Ratings		
Completion Survey Question	SAA	No SAA	SAA	No	t-test
A - Influence of Tuition Rebate on Completion	3.51	2.6	39	15	t = 2.1, $p < .05$
B - Influence of Orientation Course on Completion	2.36	2.33	33	18	t = .07, $p > .05$
C - Influence of Revised Calendar on Completion	3.00	3.43	38	23	t = .1.11, $p > .05$
D - Influence of Financial Aid Model on Completion	3.63	3.12	38	17	t = 1.18, $p > .05$
F - Likely to Pursue Additional Degree/Cert.	3.62	4.17	37	23	t = 1.65, $p > .05$
G - Likely to Return to This School	3.80	3.63	35	24	t = .49, $p > .05$

SAA – Students receiving the Tuition Rebate (Student Achievement Award) this term
No SAA – Students not receiving the Tuition Rebate this term

Research Question 3. Will changing the financial aid model (specifically from Standard Academic Year to Borrower-Based Academic Year) produce statistically significant differences in persistence and/or anticipated completion rates for students using financial aid?

Students receiving the Pell grant under the traditional (SAY) financial aid model in 2012 through 2015 persisted at 68.2 percent while those not receiving the grant persisted at 66.2 percent. Students receiving the Pell grant under the BBAY financial aid model persisted at the following, higher rates: spring 2016 – 73.7 percent, summer 2016 – 76.9 percent, fall 2016 – 78.7 percent, spring 2017 – 77.8 percent, and summer 2017 – 80.2 percent. In comparison, students not receiving the Pell grant during those same terms persisted at the following rates: spring 2016 – 68.2 percent, summer 2016 – 72.1 percent, fall 2016 – 74.6 percent, spring 2017 – 72.8 percent, and summer 2017 – 74.31 percent. The persistence rates of those students who received financial aid through BBAY in 2016-2017 exceeded the rates of those students who received financial aid through SAY in 2012-2015 (77.3 percent to 68.2 percent) as well as the rates of those students in 2016-2017 who received no financial aid (77.3 percent to 72.37 percent). The increase in persistence rates after the implementation of the four initiatives was higher for those receiving BBAY financial aid (9.1 percent) than it was for those who did not (6.2 percent). Students receiving SAY financial aid in 2012-2015 demonstrated higher persistence than those not receiving SAY financial aid in 2012-2015 by 2.06 percent. In contrast, students receiving BBAY financial aid in 2016-2017 demonstrated higher persistence than those not receiving BBAY financial aid in 2016-2017 by 4.56 percent. In every comparison, students receiving BBAY persisted at higher rates than those who did not. See Table 13 for these persistence rates.

Table 13: Persistence Rates for Students by Financial Aid Model

	Term	Received Pell	No Pell	All Students
Standard Academic Year (SAA)	Spring 2012	69.75%	66.65%	68.16%
	Summer 2012	67.54%	66.62%	67.11%
	Fall 2012	70.15%	65.75%	68.00%
	Spring 2013	67.21%	64.54%	65.96%
	Summer 2013	66.07%	68.61%	67.31%
	Fall 2013	70.33%	67.23%	68.82%
	Spring 2014	67.34%	69.21%	68.23%
	Summer 2014	65.96%	64.61%	65.29%
	Fall 2014	66.28%	64.23%	65.36%
	Spring 2015	68.76%	67.32%	68.13%
	Summer 2015	65.79%	62.97%	64.55%
	Fall 2015	71.77%	66.24%	69.28%
	Overall Average	68.23%	66.15%	67.25%
Borrower-Based Academic Year (BBAY)	Financial Aid Model Switched from Traditional to BBAY			
	Spring 2016	73.72%	68.38%	71.28%
	Summer 2016	76.87%	72.24%	74.86%
	Fall 2016	78.69%	74.51%	76.97%
	Spring 2017	76.44%	71.88%	74.50%
	Summer 2017	80.22%	74.31%	77.45%
	Overall Average	77.29%	72.37%	75.14%
	Increase over 12-15	9.08%	6.22%	7.9%

In order to determine the statistical significance of the higher BBAY persistence rates, the study then conducted three sets of differences in proportions *Z* tests. The first *Z* test demonstrated statistically significant higher rates for students receiving SAY financial aid (.6823) than their contemporaries not receiving it (.6615) ($z = 5.13$, $p < .001$, two-tailed). The second *Z* test demonstrated statistically significant higher rates for students receiving BBAY financial aid (.7729) than their contemporaries not receiving it (.7237) ($z = 10.211$, $p < .001$, two-tailed), with almost twice the *z*-score of the SAY test. The third *Z* test demonstrated statistically significant higher rates for students receiving BBAY financial aid (.7729) than their 2012-2015 SAY counterparts (.6823) ($z = 21.99$, $p < .001$, two-tailed), with four times the *z* score as the first test. In other words, students who received SAY financial aid in 2012-2015 persisted at statistically significant higher

rates than those who did not receive financial aid in those years. However, the benefit of students receiving BBAY financial aid far exceeded the benefit of students receiving SAY financial aid. Additionally, the benefit of students receiving BBAY aid exceeded the combined benefits students may have received from the other three initiatives. Table 14 reports this data.

Table 14: Significance of Persistence Rate Differences w/ and w/out SAY and BBAY

	Persistence without	Persistence with	Difference	*z* value	*p*-value
2012-2015 (SAY)	66.15%	68.23%	+2.08%	5.13	$p < .001$
2016-2017 (BBAY)	72.37%	77.29%	+4.9%	10.21	$p < .001$
BBAY over SAY	2012-2015 SAY = 68.23%	2016-2017 BBAY = 77.29%	+9.06%	20.99	$p < .001$

Question D of the Persistence Survey asked students to rate the perceived influence of the BBAY Financial Aid Model on their persistence. The combined rating across 4,772 responses yielded a mean of ($M = 3.97$) out of five. This equates to "Moderately High Influence" (4). The analysis disaggregated these results into two groups, those receiving the BBAY aid during the term in which they completed the survey versus their classmates who did not receive it. The 2,669 responses from students receiving BBAY produced an average rating of ($M = 4.13$), while those 2,103 not receiving it rated it at a mean of ($M = 3.78$). After converting these means to proportions, a difference in proportions *Z* test revealed that the mean rating from students receiving BBAY ($M = 4.13$) exceeded the mean of those not receiving it with statistical significance ($M = 3.78$) ($z = 5.9$, $p < .001$, two-tailed). Therefore, students benefitting

from BBAY rated it more influential to their persistence than students not benefitting from BBAY. See Table 15 for these *Z* test results.

Table 15: Perceived Influence of BBAY on Persistence

	Mean Rating	As a Proportion	# of Responses	*Z* test Results
Received BBAY	$M = 4.13$	$P = .826$	2669	$z = 5.9$, $p < .001$
No BBAY	$M = 3.78$	$P = .756$	2103	
All	$M = 3.97$	$P = .794$	4772	

Students submitted 5,161 Persistence Surveys with responses for Question E, for a total possible score of 25,805 in the event that an option ranked first on every survey. The resulting net scores for each of the four initiatives were as follows: Tuition Rebate (.33), BBAY Financial Aid Model (.28), Orientation Course (.13), and Revised Academic Calendar (.12). A difference in proportions *Z* test determined with statistical significance that students perceived the tuition rebate ($P = 0.33$) to be more influential than the financial aid model ($P = 0.28$) ($z = 6.81$, $p < .001$, two-tailed). Additional *Z* tests revealed statistical significance in student perceptions of both the tuition rebate ($P = 0.33$) and the financial aid model ($P = 0.28$) as more influential than either the orientation course ($P = 0.13$) or revised calendar ($P = 0.12$) ($z = 26.3$, $p < .001$, two-tailed) ($z = 26.5$, $p < .001$. two-tailed) ($z = 19.5$, $p < .001$, two-tailed) ($z = 19.7$, $p < .001$, two-tailed).

Student perceptions demonstrate that the BBAY model positively impacted student completion, as indicated by the ($M = 3.47$) influence rating from the 55 responses to Question D on the Completion Survey. Students receiving financial aid during the term (in the form of the Pell grant) rated its influence on completion nearly a half point higher ($M = 3.71$, $n = 28$) than students not receiving it ($M = 3.22$, $n = 27$). A difference

in proportions *Z* test found these differences to be statistically insignificant due to the low number of responses ($z = .79$, $p > .05$). Results from Question E showed that students ranked BBAY as second most influential on completion of the four initiatives and sixth overall out of ten possible influences (see Table 31).

Research Question 4. Will revising the academic calendar to eliminate course overlap and include weeklong breaks produce statistically significant differences in persistence and/or completion rates for students benefitting from the new calendar?

Because MMU implemented the revised academic calendar for all students at the same time in 2016, it is impossible to use a true control group in the analysis. One can assume that the elimination of course overlap and the addition of breaks throughout the school year played a role in the overall increases in persistence rates. One interesting comparison from the persistence data might provide additional weight for the argument in the absence of the control group. The study compared the summer persistence rates prior to 2016 and the summer rates during 2016 and 2017. Prior to the revised calendar, students persisted considerably less during the summer than they did in the spring and fall. A difference in proportion *Z* test comparing the combined spring and fall rates ($P = .678$) to the summer rates ($P = .659$) from 2012 to 2015 revealed a statistically significant difference ($z = 4.08$, $p < .001$, two-tailed). One possible factor for the statistically significant difference is that students chose to vacation with family/friends instead of persisting through popular vacation times such as Memorial Day and Independence Day. Providing breaks from school during those holidays allowed students to stay actively enrolled. In order to test this assumption, a difference in proportion *Z* test comparing the

spring 2016, fall 2016, and spring 2017 (P = .749) persistence rates to the 2016 and 2017 summer rates (P = .762) revealed no statistically significant difference (z = 2.8, p > .005, two-tailed). Additionally, the summer persistence rates from 2012 through 2015 increased substantially from 0.659 to 0.762 in the summers of 2016 and 2017. A difference in proportions Z test comparing the 2012 through 2015 summer rates (P = .659) to the 2016 and 2017 summer rates (P = .762) revealed a very high, statistically significant difference (z = 19.12, p < .00001, two-tailed).

Question C on the Persistence Survey asked students to rate the influence of the Revised Academic Calendar on their decisions to persist. The mean rating across 5,070 responses resulted in (M = 3.62). This equates to the upper half of the "Moderate Influence" to "Moderately High Influence" range. However, when compared to the other nine possible influences as listed on Question E, students ranked the Revised Calendar near the bottom of the list. Although, ninety students did rank it as the number one influence on their decision to persist, more than faculty (63) and Service Central (9) combined. Most students perceived the new calendar positively, but only a small percentage viewed it as a major influence on their persistence. One subgroup, veteran students, rated the Revised Academic Calendar as the most influential of the four initiatives on their decisions to persist. After converting the mean (M = 3.52) to a proportion (.704), a difference in proportions Z test revealed statistical significance in the difference when compared to veteran's second highest rated influence, BBAY Financial Aid (M = 3.14, P = .628) (z = 2.4, p < .05, two-tailed). A second Z test found statistical significance to a higher degree between veterans' ratings of the Revised Calendar (M =

3.52, $P = .704$), and their third highest rated influence, the Orientation Course ($M = 2.52$, $P = .504$) ($z = 6.5$, $p < .001$, two-tailed).

According to their responses to Question C on the Completion Survey, completing students rated the influence of the Revised Academic Calendar favorably, though not as influential as the Tuition Rebate or BBAY Financial Aid Model. The mean rating from 61 student responses resulted in ($M = 3.16$), which equates to slightly more than "Moderate Influence." Table 29 presents these mean ratings, along with the means for the other Completion Survey questions.

Research Question 5. Will an orientation course for new students produce statistically significant differences in persistence and/or anticipated completion rates for those new students?

The persistence rate for students who had taken the new Orientation Course by the end of the summer 2017 term equaled 78.4 percent. This reflects the combined persistence rates of the three 2016 terms and the spring and summer of 2017 terms. The rate for those students who successfully completed the course was 80.6 percent, but only 58.2 percent for those who had started the course but failed to successfully complete it. The rate of those students in the same time frame who had never taken an orientation course was 73.7 percent. A difference in proportions Z test comparing those who successfully completed the new Orientation Course ($P = .806$) to those who had never taken an orientation course at MMU ($P = .737$) revealed a statistically significant difference ($z = 11.9$, $p < .0001$, two-tailed). This demonstrates that students who completed the Orientation Course persisted at statistically significant higher rates than

those who did not. Even after including students who started but failed to complete the course, the persistence rates of those who had ever started the Orientation Course (78.4 percent) still exceeded the rates of those who had never attempted one (73.7 percent). A difference in proportions *Z* test comparing all students who ever attempted the new Orientation Course ($P = .784$) to those who had never taken any orientation course at MMU ($P = .737$) also revealed a statistically significant difference ($z = 8.1$, $p < .0001$, two-tailed). Table 16 presents these persistence rates and *Z* test results.

Table 16: Persistence Rates by Orientation Course Completion

	Never Took	Failed to Complete	Successfully Completed	Total Started
Overall Persistence Rates 2016-2017	.737	.582	.806	.784
			z-Score Comparisons	
	Never Took (.737)		$z = 11.9$, $p < .0001$	$z = 8.1$, $p < .0001$

Question B of the Persistence Survey asked students to rate the influence of the Orientation Course on their decision to persist. The total across 4,548 responses averaged ($M = 2.91$), which equates to less than "Moderate Influence" (3). This rating includes students who had never taken the course, students who had completed it already, and students currently in the course. Disaggregating this mean into those three groups of students produced more meaningful numbers. Students currently in the Orientation Course at the time of survey completion rated its influence at a mean of ($M = 3.63$). Students who had already completed the new Orientation Course rated its influence at a mean of ($M = 3.25$). Students that had never taken the course rated its influence at a mean of only ($M = 2.46$). The study assessed statistical significance of these differences

in means by converting them to proportions and conducting differences in proportions *Z* tests. The first differences in proportions *Z* test demonstrated that students in the course (*P* = .726) rated it as more influential than those who had already completed it in a prior term (*P* = .650) with slight statistical significance ($z = 2.6$, $p < .05$, two-tailed). The second differences in proportions *Z* test demonstrated that students in the course (*P* = .726) rated it as more influential than those who had never taken it (*P* = .492) with statistical significance ($z = 7.8$, $p < .001$, two-tailed). The third differences in proportions *Z* test demonstrated that students who had already completed the course (*P* = .650) rated it as more influential than those who had never taken it (*P* = .492) with statistical significance ($z = 9.4$, $p < .001$, two-tailed). See Table 17 for these results.

Table 17: Perceived Influence of Orientation Course on Persistence

	Mean Rating	As a Proportion	# of Responses	*Z* test Results
Current	*M* = 3.63	*P* = .736	264	Cu v. Co: $z = 2.6$, $p < .05$
Completed	*M* = 3.25	*P* = .650	1695	Co v. NT: $z = 9.4$, $p < .001$
Never Taken	*M* = 2.46	*P* = .492	1687	Cu v. NT: $z = 7.8$, $p < .001$

Current (Cu) refers to students taking Orientation Course at time of survey
Completed (Co) refers to students that had already completed the Orientation Course
Never Taken (NT) refers to students that had never taken any orientation course at MMU

Research Question 6. Will students perceive that one or more of the four initiatives (SAA, BBAY, Revised Calendar, and Orientation Course) impacts persistence or anticipated completion rates more drastically or more significantly?

The study attempts to answer this research question exclusively based on the student perception data collected in the Persistence and Completion Surveys. This section expands on portions of the survey responses explained in Research Questions 1-5. Students submitted a total of 5,289 useable Persistence Surveys across the three blocks in

the summer 2017 term out of a possible 7,675 student block enrollments, for a response rate of 68.91 percent. All undergraduate students in the nontraditional and adult college except those in Nursing and those in terminal/capstone courses received the Persistence Surveys in their course shells. The system allowed students to submit partially completed surveys. The study omitted the surveys in which students did not electronically sign the release form. A bug in the learning management system (Blackboard) corrupted the results of about 200 additional surveys. The study removed these records prior to analysis.

The average (scale of one to five) for each of the Likert scaled questions resulted in the following: Influence of Tuition Rebate on Persistence (M = 3.66, n = 4779), Influence of Orientation Course on Persistence (M = 2.91, n = 4548), Influence of Revised Academic Calendar on Persistence (M = 3.62, n = 5070), Influence of BBAY Financial Aid Model on Persistence (M = 3.97, n = 4772), Confidence that this is the right school for me (M = 4.07, n = 5088), Loyalty to this school (M = 4.29, n = 5054), Likelihood of returning next term (M = 4.75, n = 4968), and Likelihood of earning degree at this school (M = 4.76, n = 5090). Table 18 reports these results.

Table 18: Perceived Influence Ratings of Initiatives on Persistence

Survey Question	Avg. Rating*	# Responses
A-Influence of Tuition Rebate on Persistence	3.66	4779
B-Influence of Orientation Course on Persistence	2.91	4548
C-Influence of Revised Academic Calendar	3.62	5070
D-Influence of BBAY Financial Aid Model	3.97	4772
F-Confidence that this is the right school for me	4.07	5088
G-Loyalty to this school	4.29	5054
H-Likelihood of returning next term	4.75	4968
I-Likelihood of earning degree at this school	4.76	5090

* Likert scale of 1 to 5

The study compared students' Likert scores on the influence of each of the four initiatives using independent samples *t*-tests. An independent samples *t*-test revealed that students perceived the BBAY Financial Aid Model ($M = 3.97$) to be more influential than the Tuition Rebate ($M = 3.66$) (t [9549] = 10.7, $p < .001$, two-tailed); the Orientation Course ($M = 2.91$) (t [9318] = 35.9, $p < .001$, two-tailed); and the Revised Academic Calendar ($M = 3.62$) (t [9840] = 12.7, $p < .001$, two-tailed). Further independent samples *t*-tests revealed that students perceived the Tuition Rebate ($M = 3.66$) to be more influential than the Orientation Course ($M = 2.91$) (t [9325] = 24.2, $p < .001$, two-tailed), but only negligibly more than the Revised Academic Calendar ($M = 3.62$) (t [9847] = 1.36, $p > .05$, two-tailed). Students also perceived the Revised Academic Calendar ($M = 3.62$) to be more influential on persistence than the Orientation Course ($M = 2.91$) t [9616] = 24.1, $p < .001$, two-tailed). Table 19 displays these results.

Table 19: *t*-test Results of Perceived Influence of Initiatives on Persistence

Initiative	Orientation Course (2.91)	Revised Calendar (3.62)	BBAY (3.97)
Tuition Rebate (3.66)	$t = 24.2$, $p < .001$	$t = 1.36$, $p > .05$	$t = 10.7$, $p < .001$
Orientation Course (2.91)		$t = 24.1$, $p < .001$	$t = 35.9$, $p < .001$
Revised Calendar (3.62)			$t = 12.7$, $p < .001$

The study also disaggregated Persistence Survey results along the dimensions of several universal, higher education variables, finding many statistically significant differences between groups (see Appendix I). A few of these disaggregation results help to answer Research Question 6.

The study expanded upon the disaggregation of results according to Tuition Rebate status, as introduced in Research Question 2. Tuition Rebate status comprised three groups: students who received the SAA Tuition Rebate in 2017, those eligible who

did not receive it, and those categorically ineligible for it (military and veterans). Students receiving the SAA rated it as (M = 3.91, n = 2765). Students categorically eligible for the SAA who did not receive it rated it as (M = 3.70, n = 1231). Students categorically ineligible for it rated it as (M = 2.44, n = 514). Table 20 presents this data.

Table 20: Persistence Influence Ratings of SAA by SAA Classification

SAA Classification	Mean	*n*
*Received	3.91	2765
**Eligible but did not receive	3.70	1231
***Ineligible	2.44	514

*Received the Tuition Rebate in 2017
**Categorically eligible for the Tuition Rebate but did not receive it
***Not eligible for the Tuition Rebate (Active Military and Veteran)

Differences in proportions Z tests revealed statistically significant differences between each of those means, with the greatest significance between students not eligible for it and those two groups eligible for it. The first Z test showed that students receiving the SAA (M = 3.91) rated it as more influential on their persistence than those eligible who did not receive it (M = 3.70) (z = 2.9, $p < .01$, two-tailed). The second Z test revealed the most statistically significant difference out of all comparisons regarding receipt of SAA: those receiving it (M = 3.91) and those categorically ineligible for it (M = 2.44) (z = 12.6, $p < .001$, two-tailed). It is important to note that students eligible for the SAA who did not receive it (M = 3.70), perceived themselves to be statistically significantly more influenced by it than those ineligible for it (M = 2.44) (z = 9.9, $p <$ .001, two-tailed). See Table 21 for these results.

Table 21: *Z* Scores on Rated Influence of SAA by SAA Classification

SAA Classification	Z Scores	
	**Eligible but did not receive	***Ineligible
*Received	$z = 2.8$, $p < .01$	$z = 12.6$, $p < .001$
**Eligible but did not receive		$z = 9.9$, $p < .001$

*Received the Tuition Rebate in 2017
**Categorically eligible for the Tuition Rebate but did not receive it
***Not eligible for the Tuition Rebate (Active Military and Veteran)

The study then disaggregated the persistence survey results for Question B (influence of New Orientation Course) by Orientation Course status: those currently enrolled in the orientation course ($M = 3.64$, $n = 264$), those that had already successfully completed it ($M = 3.25$, $n = 1695$, and those that had never taken it ($M = 2.46$, $n = 1687$). Table 22 reports this data.

Table 22: Persistence Influence Ratings of Orientation Course by Course Status

Orientation Course Status	Mean	*n*
* Currently Enrolled	3.64	264
**Completed	3.25	1695
***Never Taken	2.46	****1687

* Currently taking the New Orientation Course at time of survey
**Completed New Orientation Course prior to time of survey
***Never took any orientation course at MMU

A difference in proportions *Z* test revealed that students who had never taken an orientation course at MMU rated its influence ($M = 2.46$, $P = .492$) significantly lower than students currently in the New Orientation Course ($M = 3.63$, $P = .726$) ($z = 7.8$, $p < .001$). Students who never took an orientation course also produced significantly lower ratings for it than those that had already completed the New Orientation Course ($M = 3.25$, $P = .650$) according to a second difference in proportions *Z* test ($z = 9.4$, $p < .001$). A third difference in proportions *Z* test showed slight statistical significance in the difference between those currently in the class ($M = 3.63$, $P = .726$) and those who

already completed it (M = 3.25, P = .650) (z = 2.6, p < .05). See Table 23 for these results.

Table 23: *Z* Scores on Rated Influence of Orientation Course by Course Status

Orientation Course Status	Z Scores	
	Completed	Never Taken
Currently Enrolled	z = 2.6, p < .05	z = 9.4, p < .001
Completed		z = 7.8, p < .001

The study next disaggregated Persistence Survey results for Question D (influence of BBAY) by students receiving the Pell grant status. Receipt of the Pell serves as an indicator of financial aid receipt. Students fell into one of two groups: received the Pell this term (M = 4.13, n = 2669), did not receive the Pell this term (M = 3.78, n = 2103). A difference in proportions Z test found that students with the Pell rated the BBAY Financial Aid Model (M = 4.13, P = .826) significantly higher than those not receiving the Pell in this term (M = 3.78, P = .756) (z = 5.9, p < .001, two-tailed). Table 24 presents these results.

Table 24: *Z* Scores on Rated Influence of BBAY by Pell Status

Pell Status this Term	Mean Rating	# of Responses	Z Score
Received	4.13	2669	z = 5.9, p < .001
Did not Receive	3.78	2103	

Questions E and J of the Persistence Survey asked students to select and rank several options from a list as being most influential. Question E asked students to select and rank five options according to their influence on the students' decision to persist into the upcoming block. Question J asked students to select and rank three options according to their influence on the students' decision to stopout or dropout. In order to compare

and statistically analyze the results, responses were scored according to rank, summed across all surveys, and divided by the best possible total scores. This strategy also standardized net scores across the two questions on each survey as well as across surveys. For question E, each rank of one earned five points, ranks of two earned four points, ranks of three earned three points, ranks of four earned two points, and ranks of five earned one point. Students submitted 5,161 surveys with responses for Question E, for a total possible score of 25,805 in the event that an option ranked first on every survey. The resulting net scores for each of the ten options in order of most influential to least were as follows: Christ-centered Focus (.65), Online Format (.54), Quality of Education (.52), Tuition Rebate (.33), Financial Aid Model (.28), Academic Advising/Support (.24), Faculty (.14), Orientation Course (.13), Revised Academic Calendar (.12), and Service Central (.04). See Table 25 for this information.

Table 25: Persistence Influence Rankings

Selection	Rank of Influence on Persistence					Gross Points	Net Score
	1	2	3	4	5		
J- Christ-centered Focus	2170	749	561	406	451	16792	0.650727
I- Online Format	1012	1150	871	626	520	14045	0.544274
H- Quality of Education	658	1245	1067	702	454	13329	0.516528
A- Tuition Rebate	518	507	590	666	787	8507	0.329665
D- Financial Aid Model	300	534	559	646	607	7212	0.279481
E- Academic Advising/Support	209	344	530	752	770	6285	0.243557
G- Faculty	63	195	343	503	457	3587	0.139004
B- Orientation Course	132	230	273	287	314	3287	0.127378
C- Revised Calendar	90	165	285	385	481	3216	0.124627
F- Service Central	9	41	66	151	263	972	0.037667
Totals	5161					25805	

The standardization of influence ranking and scoring facilitated further statistical analysis. In order to assess the statistical significance of the differences in student perceptions of the influence of the four initiatives on persistence, the next step of analysis entailed a series of differences in proportions *Z* tests. Students rated the tuition rebate and financial aid model as the top two out of the four. A difference in proportions *Z* test determined with statistical significance that students perceived the tuition rebate (P = 0.33) to be more influential than the financial aid model (P = 0.28) (z = 6.81, p < .001, two-tailed). Additional *Z* tests revealed statistical significance in student perceptions of both the tuition rebate (P = 0.33) and the financial aid model (P = 0.28) as more influential than either the orientation course (P = 0.13) or revised calendar (P = 0.12) (z = 26.3, p < .001, two-tailed) (z = 26.5, p < .001, two-tailed) (z = 19.5, p < .001) (z = 19.7, p < .001, two-tailed). No statistical significance existed in the difference between perceptions of the orientation course (P = 0.13) or revised calendar (P = 0.12) (z = 0.3, p > .05, two-tailed). Table 26 reports the results of these *Z* tests.

Table 26: *Z* Scores of Persistence Influence Ranking Differences of 4 Initiatives

Initiative with Perceived Influence Score	BBAY Financial Aid Model	Orientation Course	Revised Calendar
Tuition Rebate (.33)	z=6.81, p <.001	z=26.3, p <.001	z=26.5, p <.001
BBAY Financial Aid (.28)		z=19.5, p <.001	z=19.7, p <.001
Orientation Course (.127)			z=0.3, p > .05
Revised Calendar (.125)			

Note, however, that none of the four initiatives were among the top three perceived influences on persistence. The top three, in order, included Christ-centered Focus (.65), Online Format (.54), and Quality of Education (.52). Differences in proportions *Z* tests found that all three of these (P =.65, .54, .52) held statistically

significant more influence than any of the four initiatives (P = .33, .28, .13, .12). However, the combined influence of the four-pronged strategy (P = .86) outweighed any other single influence on persistence, attesting to its overall positive impact. Other statistically significant differences included the Tuition Rebate (P = .33) as more influential than Academic Advising/Support (P = .24) (z = 12, p < .001, two-tailed), Faculty (P = .14) (z = 25, p < .001, two-tailed), and Service Central (P = .04) (z = 49, p < .001, two-tailed). The BBAY Financial Aid Model as significantly more influential than Academic Advising/Support (P = .24) (z = 5, p < .001, two-tailed), Faculty (P = .14) (z = 18, p < .001, two-tailed), and Service Central (P = .04) (z = 39, p < .001, two-tailed). The Student Orientation Course (P = .13) and the Revised Academic Calendar (P = .12) held significantly more influence than Service Central (P = .04) (z = 13, p < .001, two-tailed). Table 27 presents these results.

Table 27: *Z* Scores of Persistence Influence Rankings of all Survey Options

Other Influences	Tuition Rebate (.33)	Fin. Aid Model (.28)	Orientation (.13)	Revised Calendar (.12)	Combined Strategy (.86)
Christ-centered (.65)	z = 51, p < .001	z = 58, p < .001	z = 76, p < .001	z = 76, p < .001	z = 48, p < .001
Online Format (.54)	z = 32, p < .001	z = 39, p < .001	z = 58, p < .001	z = 58, p < .001	z = 66, p < .001
Quality Education (.52)	z = 28, p < .001	z = 35, p < .001	z = 54, p < .001	z = 54, p < .001	z = 70, p < .001
Advising/Support (.24)	z = 12, p < .001	z = 5, p < .001	z = 15, p < .001	z = 15, p < .001	z = 105, p < .001
Faculty (.14)	z = 25, p < .001	z = 18, p < .001	z = 1.4, p > .05	z = 1.8, p > .05	z = 116, p < .001
Service Central (.04)	z = 49, p < .001	z = 39, p < .001	z = 13, p < .001	z = 13, p < .001	z = 209, p < .001

Question J on the Persistence Survey asked students to rank the top three reasons why they might stopout or dropout, which are the inverse measures of persistence and completion. Students submitted 2,434 surveys containing at least one ranked item for

this question. Each time a reason ranked first it received three points, two points for a rank of two, and one point for a rank of three. The study added the gross points for each reason and divided by the total possible score of 7,836 (in the instance that all 2,434 surveys ranked the reason first). Work/Family Obligations received 3,592 points out of the possible 7836, for a net score of 0.458. Personal Financial Reasons received the next highest score at 0.441. School Financial Reasons received the third highest score at 0.381. Health Related Reasons scored 0.187, followed closely by Burnout at 0.176, Other Reasons at 0.152, and Transferring to another school at 0.118. The reasons Only Wanted a Few Classes and No Longer Needed/Wanted Degree scored the lowest at 0.029 and 0.025. Table 28 presents this information.

Table 28: Stopout/Dropout Influence Rankings

Selection	Rank of Influence on Stopout/Dropout			*Gross Points	**Net Score
	1 (3 pts)	2 (2 pts)	3 (1 pt)		
C- Work/Family Obligations	663	566	471	3592	0.458
A- Personal Financial Reasons	680	519	381	3459	0.441
B- School Financial Reasons	492	606	295	2983	0.381
F- Health Related Reasons	223	238	320	1465	0.187
E- Burnout	171	268	331	1380	0.176
I- Other Reasons	185	100	433	1188	0.152
D- Transferring to Other School	145	159	174	927	0.139
H- No longer need/want degree	24	49	59	229	0.029
G- Only wanted a few classes	29	38	31	194	0.025
Totals	2612			7836	

*Gross points equal to sum of rank count times point value
**Net score equal to gross points divided by total possible points

This study used student perceptions gathered from the Completion Surveys to answer the completion component of Research Question 6. Students submitted a total of 70 completion surveys across seven program capstone courses offered in the summer of

2017. The capstones included Biblical Studies, Human Resources, Christian Leadership, Computer Information Technology, Criminal Justice, Healthcare Administration, and Psychology. The courses contained a total of 72 undergraduate students. The completion survey response rate exceeded 97 percent. Students were not required to respond to every question on the survey.

The study compiled the survey responses by question and determined the mean scores. On a scale of one to five, students rated the influence of each of the four initiatives on their decisions to complete as follows: Fifty-four survey responses produced a mean influence of (M = 3.26) for the SAA Tuition Rebate. Fifty-one surveys responses totaled (M = 2.35) score for the Orientation Course. Sixty-one survey responses averaged (M = 3.16) for the Revised Academic Calendar. Fifty-five survey responses yielded (M = 3.47) influence rating for the BBAY Financial Aid Model. This places all of the four initiatives between the "Some Influence" (2) rating and the "Moderately High Influence" (4) rating. 62 students rated the likelihood of pursuing additional degrees or certifications as (M = 3.83) out of five. Fifty-nine students rated the likelihood of returning to MMU as (M = 3.73). Both of those results place the means on the upper end of the range between "Neutral" (3) and "Somewhat Likely" (4). See Table 29 for these results.

Table 29: Completion Survey Results

Completion Survey Question	Mean Rating (1-5)	# of Ratings
A-Influence of Tuition Rebate on Completion	3.26	54
B-Influence of Orientation Course on Completion	2.35	51
C-Influence of Revised Calendar on Completion	3.16	61
D-Influence of Financial Aid Model on Completion	3.47	55
F-Likely to Pursue Additional Degree/Cert.	3.83	62
G-Likely to Return to This School	3.73	59

The study statistically compared students' Likert scores on the influence of each of the four initiatives on their decision to complete their programs using independent samples *t*-tests. Due to the small population of completing students in summer courses, statistical significance requires greater variation across variables. Despite this, independent samples *t*-tests revealed that students perceived the Orientation Course (M = 2.35) to be significantly less influential on their completion than the other three initiatives: Tuition Rebate (M = 3.26) (t [103] = 3.19, $p < .01$, two-tailed), the Revised Academic Calendar (M = 3.16) (t [110] = 2.93, $p < .01$, two-tailed), and the BBAY Financial Aid Model (M = 3.47) (t [104] = 3.93, $p < .01$, two-tailed) (see Table 30).

Table 30: *t*-tests on Ratings of Initiatives on Completion

Initiative	Revised Calendar (3.16)	Orientation Course (2.35)	BBAY Financial Aid (3.47)
Tuition Rebate (3.26)	$t = 0.34$, $p > .05$	$t = 3.19$, $p < .01$	$t = .75$, $p > .05$
Revised Calendar (3.16)		$t = 2.9$, $p < .01$	$t = 1.1$, $p > .05$
Orientation Course (2.35)			$t = 3.93$, $p < .01$

This study further evaluated the results of the Completion Survey through various group comparisons. For a detailed disaggregation of Completion Survey results along the dimensions of university, higher education student variables, see Appendix J.

Questions E and J of the Completion Survey asked students to select and rank several options from a list as being most influential on their completion. Question E asked students to select and rank five options according to their influence on the students' decision to complete their programs at MMU. Question J asked students to select and rank three options according to their influence on the students' decision to stopout during their program (for students who chose to stopout). In order to compare and statistically

analyze the results, the study scored the responses according to rank, summed across all surveys, and divided by the best possible total scores. This strategy also standardized net scores across the Questions E and J on each survey as well as across surveys. For question E, each rank of one earned five points, ranks of two earned four points, ranks of three earned three points, ranks of four earned two points, and ranks of five earned one point. The study calculated net scores by dividing the gross scores for each option by 340 (which equals the maximum number of points an option could earn by ranking first on every survey). See Table 31 for the Completion Survey rankings.

Table 31: Ranked Influences on Completion

Selection	Rank of Influence on Completion					Gross Points	Net Score
	1	2	3	4	5		
J- Christ-centered Focus	31	8	8	8	6	233	0.685
I- Online Format	16	23	12	3	1	215	0.632
H- Quality of Education	9	19	22	3	7	200	0.588
A- Tuition Rebate	6	4	2	7	11	77	0.226
E- Academic Advising/Support	1	2	7	12	14	72	0.212
D- BBAY Financial Aid Model	2	4	6	8	4	64	0.188
G- Faculty	0	3	3	8	8	45	0.132
B- Orientation Course	2	2	4	6	3	45	0.132
C- Revised Calendar	1	1	2	9	3	36	0.106
F- Service Central	0	1	1	1	7	16	0.047
Totals	68					Max = 340	

The standardization of influence ranking and scoring facilitated further statistical analysis. In order to assess the statistical significance of the differences in student perceptions of the influence of the four initiatives on persistence, the next step of analysis entailed a series of differences in proportions *Z* tests. Students rated the SAA Tuition Rebate and BBAY Financial Aid Model as the top two out of the four. A difference in

proportions *Z* test determined with statistical significance that students perceived the Tuition Rebate ($P = 0.226$) to be more influential than either the Orientation Course ($P = 0.13$) ($z = 3.22$, $p < .01$, two-tailed) or Revised Calendar ($P = 0.11$) ($z = 4.26$, $p < .01$, two-tailed). The difference between the Tuition Rebate ($P = 0.226$) and BBAY Financial Aid Model ($P = 0.226$) did not produce statistically significant results, according to a difference in proportions *Z* test ($z = 1.22$, $p > .05$, two-tailed). Additional *Z* tests revealed statistical significance in student perceptions of BBAY ($P = 0.19$) as more influential than either the Orientation Course ($P = 0.13$) ($z = 2.07$, $p < .05$, two-tailed) or the Revised Calendar ($P = 0.11$) ($z = 3.04$, $p < .01$, two-tailed). No statistical significance existed in the difference between perceptions of the Orientation Course ($P = 0.13$) and Revised Calendar ($P = 0.11$) ($z = 0.8$, $p > .05$, two-tailed). Table 32 reports these results.

Table 32: *z* Scores of Difference Ranks of Influence on Completion

Initiative with Perceived Influence Score	BBAY Aid Model	Orientation Course	Revised Calendar
Tuition Rebate (.226)	z=1.22, p >.05	z=3.22, p <.01	z=4.26, p <.01
BBAY Aid Model (.188)		z=2.07, p <.01	z=3.04, p <.01
Orientation Course (.132)			z=0.8, p > .05
Revised Calendar (.106)			

Thirty seven of the 70 student completion surveys contained responses for Question J, which asked for students to select and rank the top three reasons for prior stopout(s). Each time a reason ranked first it received three points, two points for a rank of two, and one point for a rank of three. The study added the gross points for each reason and divided by the total possible score of 111 (in the instance that all 37 respondents ranked the reason first). Work/Family Obligations received 63 points out of a possible 111, for a net score of 0.568. Burnout received the next highest score at 0.441.

Personal Financial Reasons received the third highest score at 0.396. Other Reasons scored 0.252, followed by School Financial Reasons at 0.153 and Health Related Reasons at 0.144. One survey ranked the reason Only Wanted a Few Classes as third for a total score of 0.009. No surveys selected the final two reasons: Transferred to Other School or No Longer Needed/Wanted Degree. See Table 33 for the ranked influences on stopout.

Table 33: Ranked Influences on Stopout

Selection	Rank of Influence on Stopout			*Gross Points	**Net Score
	1 (3 pts)	2 (2 pts)	3 (1 pt)		
C- Work/Family Obligations	15	7	4	63	0.568
E- Burnout	7	10	8	49	0.441
A- Personal Financial Reasons	7	9	5	44	0.396
I- Other Reasons	5	3	7	28	0.252
B- School Financial Reasons	0	5	7	17	0.153
F- Health Related Reasons	3	2	3	16	0.144
G- Only Wanted a Few Classes	0	0	1	1	0.009
D- Transferred to Other School	0	0	0	0	0
H- No Longer Needed/Wanted Degree	0	0	0	0	0
Totals	37			Max = 111	

*Gross points equal to sum of rank count times point value
**Net score equal to gross points divided by max possible points

Summary

This fourth chapter answered the six research questions of this study by presenting the data findings. Overall, student persistence rates climbed significantly following the implementation of the initiatives. High statistical significance of results regarding persistence rates and perceived influences on persistence resulted from large amounts of data. Fewer statistically significant findings were produced on completion and perceived influence on anticipated completion due to lack of completion data for recently

implemented initiatives and low numbers of completing students enrolled during the summer of 2017, when the study disseminated the surveys.

There are many statistically significant differences across various groupings of students regarding the influence of the four initiatives on student persistence and anticipated completion. A reasonable summary is that students benefiting the most from an initiative valued it the most. Students who rely on financial assistance for persistence and completion rated financial assistance as more influential. Students who needed the Orientation Course the most, due to lack of academic preparedness for higher education, valued it the most. Students not receiving a tuition rebate and financial aid, who also never took an orientation course at MMU, comparatively valued the Revised Academic Calendar more so than others.

This chapter answered the research questions in terms of statistical significance. The next chapter (Chapter Five) discusses the practical significance of the statistical results. Chapter Five provides an elaboration on the meaning of these findings and their relevance to the literature base on persistence and completion of nontraditional and online undergraduate students.

Chapter Five

Summary, Discussion, and Implications

Introduction

The literature review presented in Chapter Two emphasized the swelling population of nontraditional and online students in higher education. As technology continues to advance, this trend is likely to endure. A significant challenge within this population is that these students persist and complete their programs of studies at lower rates than traditional students (Krug, Dickson, Lessiter, & Vassar, 2016). The variables contributing to this challenge span several interrelated levels or categories of higher education institutions. These categories of variables include student-related, faculty-related, course/program-related, and organizational/institutional-related. The research base at the time of this study consisted primarily of the lower levels, with little data on the organizational/institutional variables. Such research is valuable to the leadership of educational organizations because it can reveal strategies benefitting from economies of scale and scope resulting from university-wide implementation.

This study focused on several variables under the direct control of university leadership. It assessed the impact of four initiatives resulting from organizational/business decisions implemented university-wide in 2016 at Midwestern Mountain University (MMU). These initiatives stemmed from limited but promising research suggesting that the school could improve persistence and completion rates within its nontraditional and online college. The four-pronged strategy consisted of a

tuition rebate for continuously enrolled students, an online orientation course for first-time students, a revised academic calendar with week-long breaks coinciding with major holidays and elimination of course overlap, and switching from the Standard Academic Year (SAY) financial aid model to the Borrower-Based Academic Year (BBAY) model. The study analyzed student persistence data from the school's data warehouse in conjunction with the results of customized surveys. The analysis consisted of a combination of descriptive statistics (means), independent samples *t*-tests, and differences in proportions *Z* tests.

Discussion of Research Questions

This section summarizes the results of the data analysis and explains the meaning of the findings for each of the six research questions that directed this study.

Research Question 1. The first research question sought to determine if an overall improvement in student persistence rates followed the implementation of the four-pronged strategy. Since the implementation of the four-pronged initiatives, persistence rates have increased by statistically significant magnitudes at MMU. The mean persistence rates following implementation ($P = .75$ in 2016 and $P = .76$ in 2017) exceeded the combined rates of the four years prior to implementation ($P = .67$ in 2012 through 2015) as well as the year just prior to implementation ($P = .675$ in 2015). Differences in proportions *Z* tests revealed all these differences to be statistically significant at a level of $p < .001$. The increased rates in 2016 and 2017 was therefore not the result of an upward trend from 2012 and forward. A clear demarcation existed once

MMU implemented the initiatives at the beginning of 2016. Please refer to Appendix H for a variety of persistence rate disaggregations by demographic and academic variables.

Higher persistence rates correlate with higher completion rates, and both correlate in the same direction with most variables in the literature (Kilburn et al., 2014; Whalen et al., 2010). All of the variables associated with increased attrition, withdrawal, dropout, and failure affect both persistence and completion (Doggrell & Polkinghorne, 2015; Olbrecht et al., 2016; and Taylor et al., 2015). Therefore, in the absence of completion data, one can assume with relative confidence that the statistically significant increases in persistence will translate into increases in completion. In support of this assumption is the total mean rating students provided on the Persistence Survey for Likelihood of Earning a Degree at This School (M = 4.76). A rating of four equated to Somewhat Likely and a rating of five (the highest rating) equated to Very Likely. Student perceptions gathered from surveys further support the positive findings as they reveal overall positive perceptions of the initiatives on students' persistence and anticipated completion. The mean ratings on the Completion Surveys for the Tuition Rebate (M = 3.26), Revised Academic Calendar (M = 3.16), and BBAY financial aid model (M = 3.47) exceeded the Moderate Influence threshold of 3.0. Only one of the completing students had taken the new Orientation Course so the lower mean rating of (M = 2.35) can be disregarded. The mean ratings on the Persistence Surveys for the Tuition Rebate (M = 3.66), Revised Academic Calendar (M = 3.62), and BBAY financial aid model (M = 3.97) exceeded the Moderate Influence threshold of 3.0 and scored closer to the Moderately High Influence threshold of 4.0. After isolating the results for students who had completed the Orientation Course, that mean (M = 3.25) also exceeded the Moderate

Influence value. Therefore, the answer to Research Question 1 is Yes; a four-pronged university business strategy produced statistically significant differences in student persistence and/or anticipated completion rates for students benefitting from those initiatives.

Research Question 2. The second research question attempted to determine the impact of a single initiative, the Student Achievement Award (Tuition Rebate). According to actual persistence rates, the data suggests, with statistical significance, that eligibility for the Tuition Rebate influenced students to persist at higher rates than students not eligible for it, regardless if the ineligibility was due to veteran status or active military status. Students eligible for the rebate persisted at over thirteen percent higher rates once the rebate went into effect ($P = .7986$) as compared to the four years prior ($P = .6642$). The differences in proportions Z test revealed strong statistical significance in these different persistence rates ($z = 27.34$, $p < .001$, two-tailed). Comparatively, the change in persistence for students who were ineligible for the SAA from prior to its implementation ($P = .71$) to after its implementation ($P = .73$) was less statistically significant ($z = 3.06$, $p < .01$). Supplemental tests ruled out the potentially confounding influence of an orientation course, financial aid, and SAA ineligibility type (veteran versus active military) on these findings.

According to survey results, student perception data supports the findings regarding actual persistence rates. Students eligible for the SAA persisted at higher rates and perceive the SAA to be a significant influence. The influence of the Tuition Rebate on actual completion rates will not be known for several years. However, one can

confidently infer that the rebate's positive effect on persistence will lead to positive effects on completion due to the connection between the variables. Additionally, student perceptions demonstrate that the Tuition Rebate positively impacted student completion, as indicated by the (M = 3.26) influence rating. Students receiving the rebate rated its influence on completion nearly a point higher than students not receiving it, which is statistically significant. Results from Question E on the Completion Survey showed that students ranked the Tuition Rebate as most influential on completion of the four initiatives and fourth overall out of ten possible influences (see Table 31). Despite the low number of responses, the Tuition Rebate's influence on completion rated (with statistical significance) higher than Faculty, the Orientation Course, the Revised Academic Calendar, and Service Central. Therefore, the answer to Research Question 2 is Yes; financial incentives for persistence (in the form of tuition rebates) produced statistically significant differences in persistence and/or anticipated completion rates for students benefitting from those incentives. This supports the conclusions drawn from several previous studies on retention (Chiyaka et al., 2016; Olbrecht et al., 2016; and Whalen et al., 2010).

Research Question 3. The third research question assessed the impact of a single initiative, the change from the Standard Academic Year (SAY) financial aid model to the Borrower-Based Academic Year (BBAY) model. In support of previous studies (Brigman, 2016; Olbrecht et al., 2016; and Pruett & Absher, 2015), this study found that students receiving financial aid (Pell grant) persisted at higher rates than those who did not. The persistence rates of students receiving SAY financial aid in 2012 through 2015

exceeded the rates of students during that time not receiving the aid (68.23 percent to 66.15 percent). Students receiving BBAY financial aid in 2016 through summer of 2017 persisted at higher rates than students not receiving it during the same time period (77.29 percent to 72.37 percent). Consequently, students receiving BBAY persisted at significantly higher rates than students receiving SAY (77.29 percent to 68.23 percent). The most telling statistic, however, is that the increase in persistence rates for students receiving BBAY over those receiving SAY (9.08 percent) exceeded the increase in persistence for students not receiving any aid (6.22 percent). Differences in proportions *Z* tests revealed statistically significant differences when comparing BBAY recipients to SAY recipients ($z = 22$, $p < .001$, two-tailed) as well as to those not receiving aid ($z = 10.211$, $p < .001$, two-tailed). It is most likely that the greater increase for BBAY students is due to BBAY alone, as all other factors were isolated out. The other 6.22 percent increase is due to the combined influence of the other three initiatives and any other unmeasured changes that occurred when the initiatives went into effect.

It would seem that from the overall mean rating of ($M = 3.97$) that students considered the BBAY financial aid model more influential than the other three initiatives, as the next highest (Tuition Rebate) received a mean of ($M = 3.66$). However, recall from the survey pilots that the test-retest reliability for Question D on the Persistence Survey fell short of the standard $r = .80$. Therefore, these results cannot stand on their own as definitive. Researchers need to balance them with the results from Question E, in which students ranked the influence of the initiatives. When the results of Question D are balanced with the results of Question E from the Persistence Survey, it seems that although students rated the influence of BBAY as influential to their persistence, they

likely perceived the Tuition Rebate to be more influential. The full impact of the BBAY Financial Aid Model on completion will not become clear for several years. However, one can confidently infer that its positive impact on persistence will lead to a positive impact on completion. Therefore, the answer to Research Question 3 is Yes; changing the financial aid model (specifically from Standard Academic Year to Borrower-Based Academic Year) produced statistically significant differences in persistence and/or anticipated completion rates for students using financial aid.

Research Question 4. The fourth research question attempted to isolate the effect of a single initiative, the Revised Academic Calendar (which included week-long breaks coinciding with national holidays and eliminated course overlap). The actual impact of the Revised Calendar on persistence and anticipated completion cannot be conclusively determined due to the lack of a meaningful control group. When isolating for the impact of the SAA and calendar change, persistence among students impacted by the SAA and calendar change improved from 65.37 percent to 69.32 percent. Whereas, persistence among students impacted by only the calendar change (other 3 variables isolated out) dropped from 68.40 percent to 65.38 percent. However, as discussed in Chapter Four, the calendar change likely contributed to the statistically significant improvements in summer persistence rates, when most students need time off from school for family activities. Prior to implementation, summer persistence (P = .659) significantly lagged spring and fall persistence numbers (P = .678). After implementation, the summer rates summer rates (P = .762) exceeded those of spring and fall (P = .749). Summer persistence rates increased from 65.9 percent to 76.2 percent. The resulting p value from

a difference in proportions *Z* test of 1.62E-80 attested to the strength of the assertion that summer persistence rates dramatically increased after the implementation of the initiatives.

An interesting disaggregation of the mean influence ratings of the Revised Calendar is according to when the student started at MMU. Over 3,600 responses from students starting after the Revised Calendar went into effect (spring of 2016) rated the calendar at (M = 3.66). Over 2,400 responses from students who started before then, and had a different calendar to compare the Revised Calendar to, rated it at (M = 3.52). Although ratings near 3.5 equate to halfway between Moderately Influential to Moderately High Influence, a difference in proportions *Z* test revealed that the mean rating deficit of those who experienced both calendars (M = 3.52, P = .704) as compared to those only experiencing the new one (M = 3.66, P = .732) was statistically significant (z = 2.4, $p < .05$, two-tailed). Additionally, students ranked the calendar revision ninth out of ten influences on completion (see Table 19). Based on the surveys, one can conclude that most students perceived the new calendar positively, but only a small percentage viewed it as a major influence on their completion. Therefore, the answer to Research Question 4 is Yes and No. Revising the academic calendar to eliminate course overlap and include weeklong breaks produced statistically significant improvements in summer persistence and/or anticipated completion rates but not for spring and fall rates.

Research Question 5. The fifth research question assessed the impact of a single initiative, the Orientation Course for new students. Differences in proportions Z tests revealed that persistence rates for students who successfully completed the Orientation

Course (*P* = .81) exceeded the rates of those who never took one (*P* = .74) and exceeded those who started but failed to complete it (*P* = .58) with statistically significant differences.

Students who took the course (*M* = 3.25) or were currently enrolled in the course (*M* = 3.63) rated its influence on their persistence significantly higher than those who never took one (*M* = 2.46). Not enough of the completing students had taken the new Orientation Course to determine significant perceptions on its influence on their completion. It is probable that when the students who took the new course take their capstone courses, the ratings for the Orientation Course on completion will increase. Based on persistence data and persistence influence perceptions, the answer to Research Question 5 is Yes; an orientation course for new students produced statistically significant differences in persistence and/or anticipated completion rates for those new students. This supports the findings of prior studies on retention (Bailey et al., 2010; Dray et al., 2011; Howell et al., 2004; Koehnke, 2013; Lorenzo, 2011; Otte, 2007; and Wang, 2006).

Research Question 6. The sixth research question assessed student perceptions on the influence of each initiative in the attempt to determine the most influential one(s). Overall, students perceived the financial initiatives (SAA and BBAY) to be more influential on their persistence and completion than either the calendar or orientation course. However, disaggregating by many variables revealed some significant differences across groups (see Appendices H, I, and J). One intuitive conclusion is that students benefitting from an initiative persisted at higher rates and rated the influence of

the initiative more positively than students not benefitting from it. Students with greater need for the initiative benefitted from it more and also rated it as more influential.

Students eligible for the SAA, both those who received it (M = 3.91) and those who did not (M = 3.70), rated the SAA as significantly more influential on persistence than those students categorically ineligible for it (M = 2.44) (see Tables 10 and 21). Students with greater financial need, as evidenced by the EFC calculations (required for financial aid application), benefitted from BBAY and SAA more and rated them more highly (see table A7).

Overall, students rated the influence of the Orientation Course on persistence at only (M = 2.91). After isolating for students who had actually completed the course (M = 3.25) or were currently enrolled in it (M = 3.64), much higher ratings become evident (see Table 22). Additionally, students with lower GPAs rated the orientation course higher and benefitted from it more in terms of increased persistence (see Table A10). Among nontraditional student populations, students with lower GPAs are generally less prepared for higher education and can therefore benefit more from an orientation course (Ice et al., 2011; Lynch, 2011). Students with lower GPAs persist and complete at lower rates than students with higher GPAs (see Table A10). Teaching students basic academic skills for success and helping them learn the online technology in online orientation courses represents an effective strategy to help students improve their GPAs and subsequently their persistence and completion.

The Revised Academic Calendar significantly benefitted summer persistence rates. This is likely because in prior years students had to withdraw or stopout in order to participate in family events over the summer. For reasons requiring further study,

females (*M* = 3.67) rated the influence of the calendar significantly higher than males (*M* = 3.53) and black students (*M* = 3.92) rated it significantly higher than white students (*M* = 3.48) (see Tables A6 and A7). Although it was ranked lower than most other influences (see Tables 25 and 31), the new calendar received positive ratings from students (midway between Moderately Influential and Moderately High Influence on the Persistence Survey) (see Table 18).

Therefore, the answer to Research Question 6 is Yes; students perceived that one or more of the four initiatives impacted persistence or anticipated completion rates more drastically or more significantly. Students generally perceived that the initiative(s) they benefitted from the most were the most impactful, and this varied across groups.

The questions requiring students to rank the influence of a variety of variables on their decisions to persist and complete provided additional insight into student motivations. On both surveys, students rated the following options as most influential: Christ-centered Focus, Online Format, and Quality of Education. Not only did students on both surveys rate these as the top three, but they rated them in the same order and by a wide margin over the next highest rated variable (the Tuition Rebate). The net scores on the Persistence Surveys (Christ-centered Focus = .65, Online Format = .54, Quality of Education = .52, Tuition Rebate = .33) mirrored those on the Completion Survey (Christ-centered Focus = .69, Online Format = .63, Quality of Education = .59, Tuition Rebate = .23). However, the three most highly rated variables cannot be changed by organizational leadership as easily as the four initiatives assessed in this study. The ratings on the top three also suffer from self-selection bias because the students completing the surveys had already chosen to study at MMU, which is a high quality, Christian school with numerous

online programs. Nevertheless, these findings should supplement the research base on variables associated with increased school loyalty, persistence, and completion.

Limitations of the Study

This section summarizes the limitations of this study, which primarily sought to assess the impact of the four leadership decisions on persistence and completion rates for students in the nontraditional and online college.

Although the demographics of MMU reveal a diverse student body that is largely consistent with the demographics of nontraditional students, all subjects attend a single, Christian school. Students at other schools, particularly non-Christians, may produce different results. All surveys solicited student perceptions regarding specific changes made at a single school. Although the four changes represent common constructs (tuition discounts, orientation courses, calendar revisions conducive to nontraditional and online programs, and financial aid model), variations in their specifications can yield different results.

Due to the fact that minimal student completion data exists for students starting after the implementation of the initiatives, it is not yet possible to compare actual completion rates across groups. For the purpose of the study at hand, completion rate improvement was inferred from improved persistence rates and students' survey responses regarding their anticipated completion. The university will need to conduct a follow-up analysis on the completion results in eight to ten years.

This study was unable to collect a large enough number of Completion Surveys for many group comparisons. Statistical significance usually requires a minimum of

thirty subjects or surveys in each subgroup. For example, in order to compare survey responses across ten different academic programs, a study needs a minimum of 300 completed surveys. Fewer than 80 students were completing their academic programs during the term in which the study disseminated surveys (summer of 2017). A more comprehensive evaluation of Completion Survey data will require a larger pool of completing students.

This study relied upon subjective student survey responses for approximately half of the analysis. Many confounding variables can affect student responses, including their mood, the instructor of the course, work related stresses, unrelated problems at the school, and more. Some of this subjectivity was offset by the use of objective persistence data, but the survey results are still subjective.

When combining survey questions together both surveys demonstrated sufficient test-retest reliability on Likert questions. The second pilot test produced $r = .86$ on the Persistence Survey and $r = .83$ on the Completion Survey. Each ranking question also demonstrated high test-retest reliability. Question E produced $r = .83$ on the Persistence Survey and $r = .99$ on the Completion Survey. Question J produced $r = .90$ on the Persistence Survey and Question H produced $r = .97$ on the Completion Survey. However, when conducting distinct item by item analysis on the Likert questions, Question D, regarding Borrower-Based financial aid only produced $r = .63$, which is well below the accepted threshold of .80. This indicates student confusion as to the meaning of the question. Many students likely rated the influence of financial aid as a whole rather than distinguishing BBAY from SAY financial aid. Although the question

specifically referenced BBAY as opposed to SAY, many students may have skimmed the questions to answer the survey as quickly as possible.

Implications for Future Studies

The first implication and recommendation concerns a follow-up study at MMU once the completion data becomes available. The National Center for Education Statistics assesses completion rates along timelines of 100, 125, 150, and 200 percent of the length of time it takes a full-time student to complete the program. The widely accepted standards are as follows: Bachelor's degrees of 120 credit hours take 48 months, Associate's degrees of 60 credit hours take 24 months, and certificates of 30 credit hours take 12 months. These rates assume a 15-hour workload in both semesters each year (National Center for Education Statistics, n.d.). A full time undergraduate student at MMU can take 27 credit hours over three terms each year (nine per term). Because of this, the standard 100 percent timeline needs to increase to 111 percent to reflect the time it takes a full-time student to complete. Therefore, when the completion data is available, it should include 111 and 222 percent timelines for accurate comparison to national norms. Students starting 120 credit hour programs after the initiatives went into effect at the beginning of 2016 will reach the 111 percent mark in 53.24 months and the 222 percent mark in 106.48 months. The full impact of the initiatives on 222 percent timeline completion rates for students starting in the spring of 2016 will not be known until the end of December, 2024, and June of 2025 for those starting in the fall of 2016. A follow-up analysis of completion data should therefore be conducted after the spring trimester of 2025.

Another implication for future study regards the duplication of the results. Based on the success of these four school-wide decisions, other schools should attempt one or more of the same decisions and assess the impact. Replication can help refine the underlying constructs and add weight to the validity of the findings. Leaders of other nontraditional and online programs can implement any combination of these four initiatives quickly and potentially yield similarly positive results on their student persistence and completion rates. Improving persistence and completion, particularly in nontraditional and online programs is paramount to the success of the students, the schools, and society as a whole. A slight increase in persistence rates equates to students taking more courses, schools receiving more tuition, and a more educated population. Increases in completion rates will also decrease the student loan default epidemic, as degreed students are more stable and earn significantly more money than people without degrees (Point: The Positive Returns of a College Education Justify Student Loan Debt, 2017).

Financially responsible organizations need to optimize their resource allocations by investing where there is the greatest return. Many government-funded universities have less incentive than private schools to do so, but even they have accountability requirements. Because of this, it is in the best interests of higher education to research, identify, and replicate those resource allocations with the greatest return on investment. Of the four initiatives implemented at MMU, three cost the university basically nothing (borrower-based financial aid model, revised academic calendar, and the online orientation course). The negligible expenses of hiring the consultant to identify these initiatives and the administrative cost to develop and implement the orientation course are

offset by the student tuition required to take the course. Any improvement in enrollment or persistence influenced by these three initiatives is profitable. The one expensive initiative, the Student Achievement Award, warrants closer financial analysis. The Chief Financial Officer worked with the Business Intelligence team to determine that the improvement in persistence generated enough additional tuition to offset the cost of the tuition discounts. However, that analysis was conducted independently of this research study and the exact numbers were not shared. The one area of potential concern was with the nursing programs, which already required continuous enrollment. Awarding these students with the Student Achievement Award for persisting is consequently much less cost effective. It is recommended that the administration consider exempting the nursing program from the award. The administration prevented this study from surveying those students due to grading complications. Therefore, the perceived impact of the initiatives on those students is not available.

Additional implications arise from the results of the surveys regarding the additional questions, which assessed student perceptions of influences other than the four initiatives central to this study. Students on both the Persistence Survey and Completion Survey rated Christ-centered Focus as the top influence on their decision to persist or complete at MMU. In an era of academic and cultural opposition to biblical, Christian beliefs, this finding presents an opportunity. Previously Bible-centered schools that have deviated from their roots to earn favor with mainstream, liberal institutions, can confidently return. Many students clearly favor the firm, unchanging foundation of a scriptural worldview to the nebulous, relativistic, and often meaningless worldview that dominates American and European schools today. Knowledge inherently requires

unchanging truths as a foundation, whether it be the laws of thermodynamics, mathematical proofs, or Scripture. Researchers at other Christian schools should similarly survey their students to see if these findings reflect a larger population. If so, it would behoove Christian schools to halt the migration toward liberalism and return to traditional, biblical truths and core values.

Students rated Online Format as the second most influential factor in their decisions to persist and complete their programs, and Quality of Education as the third. Several implications emerge from these results. The first is the confirmation of the growing preference for online higher education, particularly among nontraditional students. The flexibility exceeds any social presence benefits perceived with traditional, in-seat programs (Krug et al., 2016). This should provide additional evidence to support the need for higher education to continue in the direction towards increased virtual education. Because Quality of Education rated third and well ahead of the fourth highest rated factor, one can conclude that students do not just want flexibility at the expense of quality. They want both. Online higher education is no longer trending towards price-centered commoditization, as inferred from the Online College Students surveys, which reported affordability as the top factor in school selection for 30 percent of online students in 2014 and 45 percent in 2015 (Clinefelter & Aslanian, 2015). The survey results from this study reveal that students seek online education that is of high quality. As the supply of online education increases, price alone will not dictate demand, but rather a combination of price, quality, and possibly worldview factors.

Summary

This study assessed the impact of four university business decisions on student persistence and completion rates. At the beginning of 2016, university leadership implemented a tuition rebate for continuously enrolled students, an online orientation course for first time students, a revised academic calendar with breaks coinciding with national holidays, and the Borrower-Based Academic Year (BBAY) financial aid model. Differences in proportions *Z* tests and independent samples *t*-tests found statistically significant increases in persistence for students benefitting from these initiatives compared to students not receiving the benefits of them. The majority of students rated the two financial initiatives as more influential than the orientation course or revised calendar. However, specific groups of students that benefitted more from the latter two rated them as more influential to their persistence and completion. Although not considered as quickly implementable leadership decisions, the three highest rated influences were Christ-centered Focus, Online Format, and Quality of Education.

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Appendix A

Letter to the IRB

Date: March 13, 2017

Institutional Review Board for the Protection of Human Subjects

University of the Cumberlands

6191 College Station Drive

Williamsburg, Kentucky 40769

Dear IRB Members:

As a student in the University of Cumberlands' educational leadership program Ph.D. program, I am submitting my request to conduct research for the purposes of collecting and analyzing data in order to complete my dissertation: *University Business Decisions that Improve Persistence and Completion*. The study is a joint project with my university and our accrediting agency, the Higher Learning Commission. The goals of the study and the corresponding joint project are to study persistence and completion in order to identify associated variables, develop and implement a university strategy to improve persistence and completion based on the research, and assess the effectiveness of the strategy.

Persistence and completion rates are critical measures of success in higher education. These measures directly affect government funding, school reputation, student enrollments, and formal rankings. In the rapidly growing segment of nontraditional and online higher education, persistence and completion rates need improvement. This study focuses on persistence and completion strategies on that particular population of students.

In addition to using existing data in my college's Learning Management System, I also plan to implement two custom surveys. Students who are not completing their degree will see the Persistence Survey and students who are in their final class will see the Completion Survey. These surveys specifically target student perceptions of the initiatives executed by the college to improve persistence and completion. Prior to administering these surveys, I will pilot them on two groups of 30-40 students. Our student advisors will randomly contact students and request their voluntary participation. Non-completing students will take the Persistence Survey and then re-take it four weeks later. Completing students will take the Completion Survey and then re-take it four weeks later.

Once the pilots are completed and IRB approval granted, I will load the surveys into every undergraduate course shell in the Learning Management System for the college at which I am employed. Students will have the option to take the survey for five points of extra credit. After reading the Informed Consent pdf (which will be linked to the survey) they will need to acknowledge consent by typing their names and the date. They will also have the option to contact me and request that their survey be omitted from the study. Students will be: (1) allowed to volunteer; (2) guaranteed anonymity; (3) protected from any personal or mental harm; and (4) the confidentiality of professional educators and students' data will be maintained.

The IRB application, Informed Consent pdf, as well as the two surveys are attached. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Noah Antisdel

nantisdel3928@ucumberlands.edu

Office Phone: 303-963-3314

Cell Phone: 720-550-0495

Appendix B

Informed Consent

CONSENT TO SERVE AS A PARTICIPANT IN A RESEARCH PROJECT

Project Title:	*A STUDY OF UNIVERSITY BUSINESS DECISIONS THAT IMPROVE PERSISTENCE AND COMPLETION*
Project Researcher:	Noah Antisdel
Researcher Email:	nantisdel3928@ucumberlands.edu
School Address:	8787 W Alameda Ave, Lakewood, CO 80226
Home Address:	8555 W. Dakota Ave., Apt A107, Lakewood, CO 80226
Phone:	School: 303-963-3314; Cell: 720-550-0495

Introduction:

You have the option to participate in a research project conducted through Colorado Christian University and the University of the Cumberlands. Noah Antisdel, a doctoral student, is conducting the research study. This brief document explains the project. Participation in this study is entirely voluntary and you can choose to participate or leave the study at any time. All of your responses to this survey will remain anonymous and cannot be linked to you in any way. No identifying information about you will be collected and there are no risks that are associated with this study.

A brief explanation of the research project is written below. Your participation in this project requires your consent, which is given by typing your name (signature) on this survey. Please read this form carefully. If you agree to participate in this project, please type your name and date at the indicated space on the survey.

Nature and Purpose of the Project:

The purpose of this study is to assess the effectiveness of four initiatives on improving persistence and completion rates. The study examines aggregate persistence and completion rates across the university in conjunction with student perception data (from this survey).

Explanation of Procedures:

You may ask any questions you have to help you understand the project. A basic explanation of the project follows. Please read this explanation and discuss with the researcher any questions you may have. Participants only need to complete this brief 3-5 minute survey. Participants give consent on the survey itself by typing their name and date.

Potential Benefits:

The anticipated benefit of this project is greater insight into how to help students persist in their educational programs and eventually complete them (graduate). The students, universities, and society as a whole all benefit when the students succeed.

Potential Risks:

There are no risks or discomforts associated with this study.

Costs:

There are no costs associated with participating in this study.

Voluntary Participation:

Participation in this study is strictly voluntary. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

Confidentiality and Anonymity:

The researcher will keep all of your results confidential and protect your anonymity. The researcher will only present the results in aggregate form (university/group averages) with all individual/identification information removed.

Who to call if you have any questions:

Please refer any questions to Noah Antisdel, the project researcher (contact information is at the top of this document).

What Signing This Survey Means:

By electronically signing the survey, you agree to participate in this research study. This document explained the purpose, procedures, potential risks, and benefits of participation in this study. You may withdraw from this research project at any time without consequences. You may save a copy of this consent documentation for your records. If you decide that you do not want your survey included in the data analysis, email the researcher to let him know.

Appendix C

Student Persistence Survey

Ensuring that our students persist and complete their programs of study is a top priority. We need your feedback as to which university investments are most influential to your persistence so that we can continually increase the success of all of our students.

Click on the Informed Consent document (pdf) and review its contents prior to completing this brief survey. If you agree to participate in the study, type your name and date in the two rows provided:

_____

_____

If you plan to take a course in the next available class/block, or already have registered, please rate the influence of the following university initiatives on your decision. Select *6 – Not Applicable* if you are not continuing.

A. Tuition Rebate: The Student Achievement Award (for students who are continuously enrolled).
    1 – Little to no influence
    2 – Some influence
    3 – Moderate influence
    4 – Moderately high influence
    5 – High influence
    6 – Not Applicable

B. Adult Studies Seminars (new student orientation courses): Classes PHL-215A, INT-201A, or INT-211A.
    1 – Little to no influence
    2 – Some influence
    3 – Moderate influence
    4 – Moderately high influence
    5 – High influence
    6 – Not Applicable

C. Life Balance: Academic calendar with built-in, weeklong breaks throughout the school year.
    1 – Little to no influence
    2 – Some influence
    3 – Moderate influence
    4 – Moderately high influence
    5 – High influence
    6 – Not Applicable

D. Financial Aid: Adequate financial aid to cover 9 credits per semester. A new financial aid model was introduced at the beginning of 2016 that distributes the funds more quickly and more in sync with our academic calendar.
   1 – Little to no influence
   2 – Some influence
   3 – Moderate influence
   4 – Moderately high influence
   5 – High influence
   6 – Not Applicable

E. Please rank the top 5 influences on your decision to take a course in the next block from high to low by typing the letters of the influences:

	A. Tuition Rebate	
1. _____	B. Adult Studies Seminars	F. Service Central
2. _____	C. Revised Academic Calendar	G. Faculty
3. _____		H. Quality of Education
4. _____	D. Financial Aid Model	I. Online Format
5. _____	E. Academic Advising/Support	J. Christ-centered Focus

F. How confident are you that this is the right school for you?
   1. Very unconfident
   2. Somewhat unconfident
   3. Neutral
   4. Somewhat confident
   5. Very confident
   6. Not Applicable

G. How much loyalty do you feel to this school, based on your experiences here?
   1. Very little loyalty
   2. Little loyalty
   3. Some loyalty
   4. Much loyalty
   5. Very much loyalty
   6. Not Applicable

H. How likely is it that you will take courses at this school next semester?
   1. Very unlikely
   2. Somewhat unlikely
   3. Neutral
   4. Somewhat likely
   5. Very likely
   6. Not Applicable

I. How likely is it you will earn a degree from this school?

1. Very unlikely
2. Somewhat unlikely
3. Neutral
4. Somewhat likely
5. Very likely
6. Not Applicable

J. If you plan to leave (temporarily or permanently), please rank the top reasons in order of how much they contribute to your decision by typing the letters of the influences (if you plan to stay, skip this question):

1. _____
2. _____
3. _____

A. Personal financial reasons
B. School financial reasons (financial aid, costs, etc.)
C. Work/family obligations
D. Transferring to other school
E. Burnout - need extended break
F. Health-related reasons
G. Only wanted to take a few classes
H. No longer need/want the degree
I. Other Reason(s)

Appendix D

Student Completion Survey

Ensuring that our students persist and complete their programs of study is a top priority. We need your feedback as to which university investments are most influential to your persistence so that we can continually increase the success of all of our students.

Click on the Informed Consent document (pdf) and review its contents prior to completing this brief survey. If you agree to participate in the study, type your name and date in the two rows provided:

_____

_____

If this is your final course required for program completion, please rate the influence of the following university initiatives on your decision to complete your degree at this school:

A. Tuition Rebate: The Student Achievement Award (for students who are continuously enrolled).
    1 – Little to no influence
    2 – Some influence
    3 – Moderate influence
    4 – Moderately high influence
    5 – High influence
    6 – Not Applicable

B. Adult Studies Seminars (new student orientation courses): Classes PHL-215A, INT-201A, or INT-211A.
    1 – Little to no influence
    2 – Some influence
    3 – Moderate influence
    4 – Moderately high influence
    5 – High influence
    6 – Not Applicable

C. Life Balance: Academic calendar with built-in, weeklong breaks throughout the school year.
    1 – Little to no influence
    2 – Some influence
    3 – Moderate influence
    4 – Moderately high influence
    5 – High influence
    6 – Not Applicable

D. Financial Aid: Adequate financial aid to cover 9 credits per semester. A new financial aid model was introduced at the beginning of 2016 that distributes the funds more quickly and more in sync with our academic calendar.

1 – Little to no influence
2 – Some influence
3 – Moderate influence
4 – Moderately high influence
5 – High influence
6 – Not Applicable

E. Please rank the top 5 influences on the decision to complete your program here from high to low by typing the letters of the influences:

1. _____
2. _____
3. _____
4. _____
5. _____

A. Tuition Discount
B. Adult Studies Seminars
C. Revised Academic Calendar
D. Financial Aid Model
E. Academic Advising/Support
F. Service Central
G. Faculty
H. Quality of Education
I. Online Format
J. Christ-centered Focus

F. Do you anticipate returning to school for additional certifications or degrees in the future?

1. Very unlikely
2. Somewhat unlikely
3. Neutral
4. Somewhat likely
5. Very likely
6. Not Applicable

G. How likely is it that you will return to this school?

1. Very unlikely
2. Somewhat unlikely
3. Neutral
4. Somewhat likely
5. Very likely
6. Not applicable

H. If you took a semester or more break during your studies at this school, please rank the top reasons in order of how much they contributed to your decision by typing the letters of the influences (if you persisted every semester, skip this question):

1. _____
2. _____
3. _____

A. Personal financial reasons
B. School financial reasons (financial aid, costs, etc.)
C. Work/family obligations
D. Transferred to other school
E. Burnout - needed extended break
F. Health-related reasons
G. Only wanted to take a few classes
H. No longer needed/wanted the degree
I. Other Reason(s)

Appendix E

Garland's Model of the Barriers to Persistence Modified with Technology (Schilke, 2001)

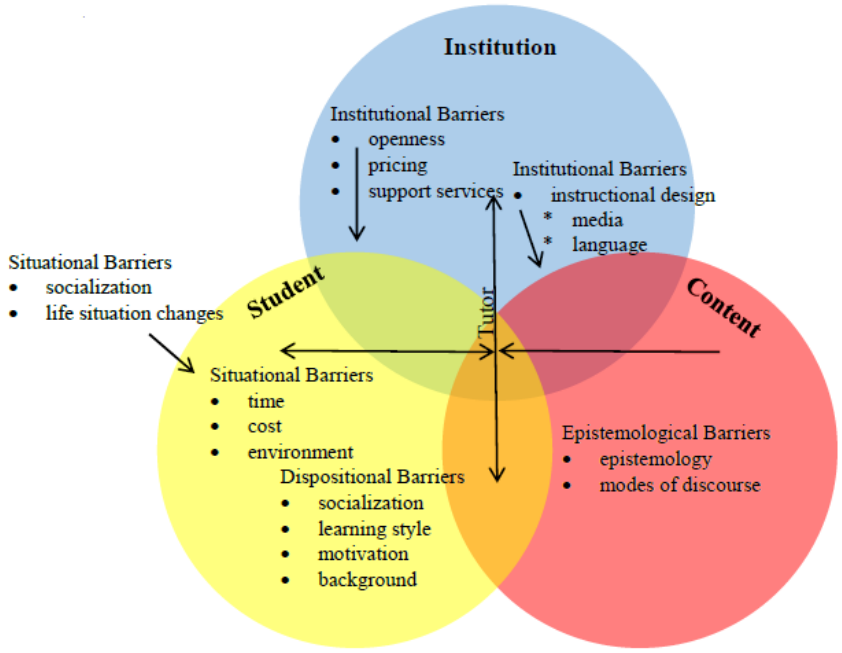

Figure 1 Conceptual model from Garland (1992).

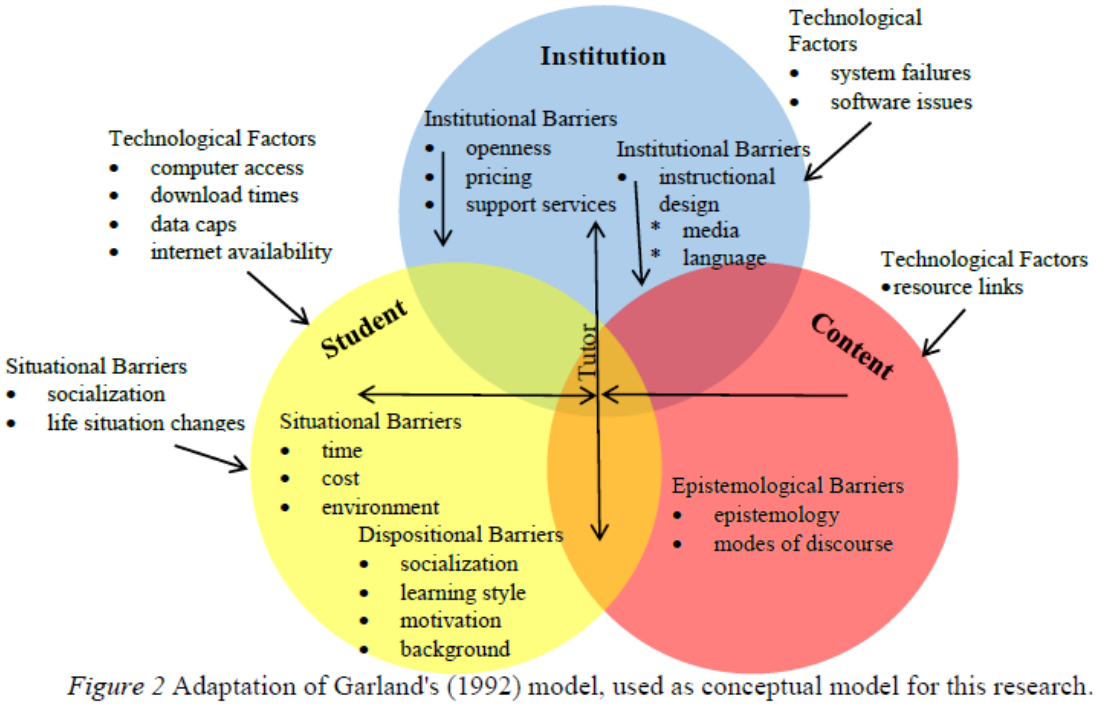

Figure 2 Adaptation of Garland's (1992) model, used as conceptual model for this research.

Reference – Schilke (2001) as cited in McClelland (2014, p. 15-16).

Appendix F

Yorke and Thomas's Retention Model

Factors likely to have a positive impact on student retention and subsequent success:

- an institutional climate supportive in various ways of students' development, that is, perceived as 'friendly';
- an emphasis on support leading up to, and during, the critically important first year of study;
- an emphasis on formative assessment in the early phase of programmes;
- a recognition of the importance of the social dimension in learning activities; and
- recognition that the pattern of students' engagement in higher education was changing, and a preparedness to respond positively to this in various ways.

Above all is a deep commitment running through the institution, which seeks to maximize the success of its students (Yorke & Thomas, 2003, p. 72).

Appendix G

Institutional Review Board Application with Signatures

Department of Leadership Studies
6429 College Station Drive
Williamsburg, KY 40769
Tel. 549-4403 OR 549-4492
Email: barry.vann@ucumberlands.edu

INSTITUTIONAL REVIEW BOARD (IRB) FOR THE PROTECTION OF HUMAN SUBJECTS

Instructions

This application must be approved by the EdD/PhD IRB Board before writing Chapters Four and Five of the dissertation. Detailed guidance and directions for completing this form are available on the EdD Program web site. If you have questions or need assistance, please contact us at (606) 549-4403; 549-4492 or barry.vann@ucumberlands.edu.

1. **Project Information**

Title: A STUDY OF UNIVERSITY BUSINESS DECISIONS THAT IMPROVE PERSISTENCE AND COMPLETION

2. **Principal Investigator's Contact Information**

Name Prefix:
First: Noah
Middle: Franklin
Last: Antisdel

Address: 8555 W. Dakota Ave, Apt A107, Lakewood, CO 80226

Phone: 720-550-0495

2.1 Faculty Sponsor's Contact Information (All Students are required to have a faculty sponsor)

Name Prefix: Dr.
First: Jennifer
Middle
Last: Simpson

Address: 6429 College Station Dr, Williamsburg, KY 40769

Phone: 1-800-343-1609 ext. 4492

3.0 Dissertation Committee

List all committee members below. Each member must be a graduate level faculty member at the University of the Cumberlands. Members must be appointed by the student's dissertation advisor and the program director. One member must be employed outside of the EdD program.

Name	Academic Department/Program

4.0 Ethical Treatment Conditions for Human Subjects

To be approved, the doctoral candidate must ensure the protection of human subjects. This includes freedom from the fear of reprisal, emotional distress or physical harm.

1. Are participants assured of anonymity? Yes X, No ___
2. Will participants be exposed to mental or physical stimuli of an experimental nature? Yes ___, No X If yes, what precautions will be taken to protect the participant from harm?
3. Is the study designed to measure perceptions of an issue via a survey form? Yes X, No ___ (Please attach the survey form to this application)
4. Does your study rely on Census data or other established measures such as test scores? Yes ___, No X

5.0 Approval Signatures

By signing this application, you are affirming that no harm will come to study participants. All members must be employed as faculty at the University of the Cumberlands.

Student Researcher Noah Antisdel Date 3/30/2017

Dissertation Advisor _____ Date 4-3-17

Department Chair _____ Date 4-4-17

Appendix H

Detailed Disaggregation of 2017 Spring Persistence Data

The detailed disaggregation analysis used the 2017 spring term persistence data. It grouped students by various demographics and academic variables. Females (75.5 percent) persisted at higher rates than males (72.1 percent). Of the race/ethnicity groups, white students persisted at higher rates (76.23 percent) than Hispanic/Latino (75.55 percent), American Indian/Alaskans (73.94 percent), black students (69.47 percent), and Asian/Pacific Islanders (69.06 percent). Military veterans persisted at the highest rates of any demographic variable group (81.38 percent), particularly when compared to active military (57.46 percent). In-state students (75.76 percent) persisted at higher rates than out-of-state students did (73.31 percent). The overall persistence rate for students with a calculated Estimated Family Contribution (EFC) was 76.39 percent. When grouped into three ranges, the higher the EFC, the higher the persistence rates. Those students with $0 EFC persisted at 75.17 percent. Those above $0 and below $40,000 persisted at 77.45 percent and those above $40,000 persisted at 80.67 percent. This suggests that students of higher socio-economic status persist at higher rates. Table A1 presents this data.

Table A1: Spring 2017 Persistence Rates by Demographic Categories

Female	75.48%
Male	72.10%
White	76.23%
Hispanic/Latino	75.55%
American Indian/Alaskan	73.94%
Black	69.47%
Asian/Pacific Islander	69.06%
Veteran	81.38%
Active Military	57.46%
In-State	75.79%
Out-of-State/Unknown	73.31%
EFC > $40,000	80.67%
EFC > $0 < $40,000	77.45%
EFC = $0	75.17%
Total w/ Calculated EFC	76.39%

The data analysis also revealed differences across degree types. Students pursuing a Bachelor of Arts degree (79.81 percent) persisted at higher rates than those pursuing a Bachelor of Science (75.83 percent), Associate of Arts (70.61 percent), Associate of Science (70.14 percent), or Certificate (55.88 percent). Students with no known declared degree persisted at only 30.09 percent. Table A2 reports these rates.

Table A2: Spring 2017 Persistence Rates by Declared Degree

Unknown	30.09%
Certificate	55.88%
Associate of Science	70.14%
Associate of Arts	70.61%
Average for All	74.50%
Bachelor of Science	75.83%
Bachelor of Arts	79.81%

When comparing persistence rates across all degree types among the most popular academic programs, Education students persisted at the highest rates (80.48 percent), followed by Healthcare Administration (78.82 percent), Nursing (78.10 percent), Biblical Studies (77.42 percent), and Accounting (77.33 percent). The next tier of programs included Information Systems Management (75.96 percent), Psychology (74.85 percent), and Computer Information Technology (74.39 percent). The bottom tier included Human Resources (72.38 percent), Criminal Justice (71.95 percent), Organizational Management (71.25 percent), and Business Administration (71.01 percent). See Table A3 for these data.

Table A3: Spring 2017 Persistence Rates by Specific Program Across all Degree Types

Education	80.48%
Healthcare Administration	78.82%
Nursing	78.10%
Biblical Studies	77.42%
Accounting	77.33%
Information Systems Management	75.96%
Psychology	74.85%
Average for All Programs	74.50%
Computer Information Technology	74.39%
Human Resources	72.38%
Criminal Justice	71.95%
Organizational Management	71.25%
Business Administration	71.01%

When isolating the same assessment to only students pursuing bachelor's degrees, the persistence rates changed slightly. Eliminating the certificate and associate's degree-seeking students also eliminated the lower persistence rates associated with those degrees. This provided more of an equal comparison across programs. Some programs only offer bachelor's degrees and therefore produced the same persistence rates. This

included Education (80.48 percent), Nursing (78.10 percent), Information Systems Management (75.96 percent), Computer Information Technology (74.39 percent), and Organizational Management (71.25 percent). The persistence rates of the remaining programs all increased when isolating to bachelor's degree seekers. This includes Biblical Studies (80.42 percent), Healthcare Administration (79.06 percent), Accounting (78.93 percent), Human Resources (75.76 percent), Psychology (75.61 percent), Criminal Justice (75.42 percent), Business Administration (72.41 percent), and Organizational Management (71.25 percent). Although persistence rates did vary by program, all programs persisted within a range of only about nine percent (71.25 to 80.48). That shows surprising consistency across programs of study. Table A4 displays these rates.

Table A4: Spring 2017 Program Persistence Rates for Bachelor's Degrees

Education	80.48%
Biblical Studies	80.42%
Healthcare Administration	79.06%
Accounting	78.93%
Nursing	78.10%
Average for Bachelor's Degrees	76.60%
Information Systems Management	75.96%
Human Resources	75.76%
Psychology	75.61%
Criminal Justice	75.42%
Computer Information Technology	74.39%
Business Administration	72.41%
Organizational Management	71.25%

When grouping students by cumulative grade point average (GPA), generally the higher the GPA, the higher the persistence rate. However, there were significant increases when moving from the two ranges under 2.0 (58 percent) to the 2.0-2.99 range (71 percent). Little difference existed between the 3.0-3.99 (79 percent) students and the

perfect 4.0 students (81 percent). This data provides a good signal to university advisors of students at higher risk of attrition. Table A5 reports these rates.

Table A5: Spring 2017 Persistence Rates by Cumulative GPA

GPA Range	Persistence Rate
< 1.0	58.24%
1-1.99	58.04%
2.0-2.99	71.44%
3.0-3.99	79.05%
4.0	80.77%

Appendix I

Detailed Disaggregation of Persistence Survey Results

The study then disaggregated the same survey results according to several variables in order to locate potentially significant differences between groups, as identified by independent samples *t*-tests. Males and females rated three questions similarly, within a few percentage points of each other. Females rated slightly higher for the influence of the Orientation Course (M = 2.93 versus M = 2.85), the likelihood of returning next term (M = 4.76 versus M = 4.72), and the likelihood of earning a degree at MMU (M = 4.77 versus M = 4.74). These three were the only differences lacking in statistical difference between males and females.

An independent samples *t*-test revealed that females (M = 3.80) rated the Tuition Rebate as more influential than males (M = 3.32) (t [4777] = 10, $p < .001$, two-tailed). A second independent samples *t*-test revealed that females (M = 3.67) rated the Revised Academic Calendar as slightly more influential than males (M = 3.53) (t [5068] = 3.23, $p < .005$, two-tailed). A third independent samples *t*-test revealed that females (M = 4.08) rated the BBAY Financial Aid Model as considerably more influential than males (M = 3.70) (t [4770] = 8.9, $p < .001$, two-tailed). A fourth independent samples *t*-test revealed that females (M = 4.03) rated their confidence that MMU was the right school more highly than males (M = 4.19) (t [5086] = 3.15, $p < .005$, two-tailed). A fifth independent samples *t*-test demonstrated that females (M = 4.33) rated their loyalty to MMU as higher than males (M = 4.19) (t [5052] = 5.21, $p < .001$, two-tailed). Table A6 displays these mean ratings and *t*-test results.

Table A6: Mean Persistence Influence Ratings by Gender

Survey Question	Female	*n*	Male	*n*	*t*-test
A-Influence of Tuition Rebate on Persistence	3.80	3440	3.32	1339	*t=10, p<.001*
B-Influence of Orientation Course on Persistence	2.93	3213	2.85	1335	*t=1.6, p>.05*
C-Influence of Revised Academic Calendar	3.67	3595	3.53	1475	*t=3.2, p<.005*
D-Influence of BBAY Financial Aid Model	4.08	3449	3.70	1323	*t=8.9, p<.001*
F-Confidence that this is the right school for me	4.03	3602	4.17	1486	*t=3.5, p<.005*
G-Loyalty to this school	4.33	3583	4.19	1471	*t=5.2, p<.001*
H-Likelihood of returning next term	4.76	3515	4.72	1453	*t=1.9, p>.05*
I-Likelihood of earning degree at this school	4.77	3606	4.74	1484	*t=1.2, p>.05*

The study next disaggregated the mean influence ratings on the Persistence Surveys along demographic dimensions. According to race/ethnicity, 2,762 responses from white/non-Hispanic students averaged (*M* = 3.55) on the influence of the SAA Tuition Rebate, 2,587 yielded (*M* = 2.68) on the influence of the Orientation Course, 2,944 averaged (*M* = 3.48) on the Revised Calendar, and 2,766 resulted in (*M* = 3.89) on the influence of BBAY. The 660 surveys from Hispanic/Latino students averaged (*M* = 3.93) influence of the SAA, 649 yielded (*M* = 3.14) on the Orientation Course, 709 averaged (*M* = 3.83) on the Revised Calendar, and 673 produced a mean influence rating of (*M* = 4.12) for BBAY. The 217 responses from American Indian/Alaskan students averaged (*M* = 3.87) for the SAA, 211 averaged (*M* = 2.94) for the Orientation Course, 224 averaged (*M* = 3.75) for the Revised Calendar, and 212 produced (*M* = 4.16) for BBAY. The 909 responses from Black/African American students produced a mean influence rating of (*M* = 3.78) for the SAA, 876 averaged (*M* = 3.35) for the Orientation

Course, 929 averaged (*M* = 3.92) for the Revised Calendar, and 885 responses produced a mean influence rating of (M = 4.09) for BBAY. The 137 Asian/Pacific Islander students produced a mean influence rating of (*M* = 3.74) for the SAA; 130 produced (*M* = 3.31) for the Orientation Course; 148 resulted in (*M* = 3.66) for the Revised Calendar; and 135 produced (*M* = 4.04) for BBAY. The 349 surveys from veterans yielded (*M* = 2.34) for SAA. Note that veterans are categorically ineligible for the award. The 452 responses from veterans averaged (*M* = 2.52) for the Orientation Course; 513 produced (*M* = 3.52) for the Revised Calendar; and 368 netted (*M* = 3.14) for BBAY. The 219 responses from military students (including all classifications aside from veteran) produced a mean influence rating of (*M* = 2.53) for the SAA. Note that military students represent the other group that are categorically ineligible for the SAA. The 281 surveys from military students averaged (*M* = 2.64) for the Orientation Course; 320 averaged (*M* = 3.68) for the Revised Calendar, and 277 responses produced a mean influence rating of (*M* = 3.69) for BBAY. The student next grouped the results into in-state versus out-of-state. The 2,063 responses from in-state students produced (*M* = 3.55) for the SAA; 1,979 yielded (*M* = 2.68) for the Orientation Course; 2,262 averaged *(M* = 3.59) for the Revised Calendar; and 2,065 produced a mean influence rating of (*M* = 3.92) for BBAY. The 2,716 out-of-state responses averaged (*M* = 3.75) for SAA; 2,569 netted (*M* = 3.08) for the Orientation Course; 2,808 produced an average of (*M* = 3.65) for the revised calendar; and 2,707 responses created a mean influence rating of (*M* = 4.01) for BBAY. The final demographic dimension used for the study concerned students' Estimated Family Contribution (EFC) amounts. This is an indicator of socioeconomic status. The analysis grouped students into four categories: no EFC recorded, EFC greater than or equal to

$40,000, EFC greater than zero but less than $40,000, and EFC equal to zero. The 557 responses from students without a recorded EFC produced a mean influence rating for the SAA of (*M* = 2.85); 632 averaged (*M* = 2.60) for the Orientation Course; 739 yielded (*M* = 3.55) for the Revised Calendar, and 499 produced a mean influence rating of (*M* = 2.96) for BBAY. Note that only three of the 499 received financial aid this term. The 83 responses from students with EFCs of $40,000 or greater rated the SAA as (*M* = 3.67); 75 averaged (*M* = 2.60) for the Orientation Course; 83 yielded (*M* = 3.49) for the Revised Calendar; and 74 responses rated BBAY as (*M* = 3.86). The 2,044 responses from students with EFCs between zero and $40,000 rated the SAA as (*M* = 3.74); 1,868 averaged (*M* = 2.84) for the Orientation Course; 2,140 averaged (*M* = 3.62) for the Revised Calendar; and 2,139 responses produced a mean influence rating of (*M* = 4.05) for BBAY. The 2,095 responses from students with the greatest need for financial aid (EFC = 0) averaged (*M* = 3.81); 1,973 produced a mean of (*M* = 3.08) for the Orientation Course; 2,140 averaged (*M* = 3.66) for the Revised Calendar; and 2,139 responses yielded a mean influence rating of (*M* = 4.13) for BBAY. Students with the greatest need for financial aid rated BBAY as most influential to their persistence. Without the steady distribution of funds across the three terms each year, many would not be able to persist. Table A7 presents these results.

Table A7: Mean Persistence Influence Ratings by Demographic Variables

	SAA Tuition Rebate	Orientation Course	Revised Calendar	BBAY Fin. Aid
White	3.55, *n* = 2762	2.68, *n* = 2587	3.48, *n* = 2944	3.89, *n* = 2766
Hispanic/Latino	3.93, *n* = 660	3.14, *n* = 649	3.83, *n* = 709	4.12, *n* = 673
American Indian/Alaskan	3.87, *n* = 217	2.94, *n* = 211	3.75, *n* = 224	4.16, *n* = 212
Black	3.78, *n* = 909	3.35, *n* = 876	3.92, *n* = 929	4.09, *n* = 885
Asian/Pacific Islander	3.74, *n* = 137	3.31, *n* = 130	3.66, *n* = 148	4.04, *n* = 135
Veteran	*2.34, *n* = 349	2.52, *n* = 452	3.52, *n* = 513	3.14, *n* = 368
**Active Military	*2.53, *n* = 219	2.64, *n* = 281	3.68, *n* = 320	3.69, *n* = 277
In-State	3.55, *n* = 2063	2.68, *n* = 1979	3.59, *n* = 2262	3.92, *n* = 2065
Out-of-State/Unknown	3.75, *n* = 2716	3.08, *n* = 2569	3.65, *n* = 2808	4.01, *n* = 2707
No EFC Recorded	2.85, *n* = 557	2.60, *n* = 632	3.55, *n* = 739	***2.96, *n* = 499
EFC ≥ $40,000	3.67, *n* = 83	2.60, *n* = 75	3.49, *n* = 83	3.86, *n* = 74
EFC > $0 < $40,000	3.74, *n* = 2044	2.84, *n* = 1868	3.62, *n* = 2108	4.05, *n* = 2060
EFC = $0	3.81, *n* = 2095	3.08, *n* = 1973	3.66, *n* = 2140	4.13, *n* = 2139

*Categorically ineligible for Tuition Rebate
**Active Military includes all military categories except veterans
***Only 3 out of 499 received the Pell this term
n = Number of survey responses

The study next disaggregated the influence ratings on the Persistence Surveys according to the students' declared degrees of study. Fifty four responses from students without a known declared degree rated the SAA at (*M* = 2.65); 48 averaged (*M* = 2.31) on the Orientation Course, 73 produced (*M* = 3.19) for the Revised Calendar; and 55 rated BBAY with a mean influence of (*M* = 2.75). The 636 responses from students pursing an Associate of Science produced a mean influence rating of (*M* = 3.98) for the SAA, 608 averaged (*M* = 3.32) for the Orientation Course, 645 yielded (*M* = 3.86) for the Revised Calendar; and 633 resulted in a mean rating of (*M* = 4.15) for BBAY. The 394 responses from students pursuing an Associate of Arts degree netted (*M* = 3.61) for the SAA, 375 produced (*M* = 3.16) for the Orientation Course, 405 yielded (*M* = 3.70) for the Revised Calendar; and 381 averaged (*M* = 3.81) for BBAY. The 2,408 responses from students pursuing a Bachelor of Science produced a mean influence rating of (*M* = 3.64) for the

SAA; 2,322 averaged (*M* = 2.81) for the Orientation Course; 2,599 netted (*M* = 3.59) for the Revised Calendar; and 2,409 resulted in (*M* = 3.95) for BBAY. The 772 responses from students pursuing a Bachelor of Arts produced a mean influence rating of (*M* = 3.53) for the SAA; 748 averaged (*M* = 2.84) for the Orientation Course, 819 yielded (*M* = 3.60) for the Revised Calendar; and 772 resulted in a mean of (*M* = 4.01) for BBAY. The highest ratings for all four initiatives came from students pursuing an Associate of Science. Table A8 displays these results.

Table A8: Mean Persistence Influence Ratings by Academic Degree

	SAA Tuition Rebate	Orientation Course	Revised Calendar	BBAY Fin. Aid
Unknown	2.65, *n* = 54	2.31, *n* = 48	3.19, *n* = 73	2.75, *n* = 55
Associate of Science	3.98, *n* = 636	3.32, *n* = 608	3.86, *n* = 645	4.15, *n* = 633
Associate of Arts	3.61, *n* = 394	3.16, *n* = 375	3.70, *n* = 405	3.81, *n* = 381
Bachelor of Science	3.64, *n* = 2408	2.81, *n* = 2322	3.59, *n* = 2599	3.95, *n* = 2409
Bachelor of Arts	3.53, *n* = 772	2.84, *n* = 748	3.60, *n* = 819	4.03, *n* = 772

n = Number of survey responses

The next analysis disaggregated the mean persistence influence ratings by academic program. For every program evaluated, BBAY received the highest mean rating. Responses from students in the Education program produced a higher mean rating for the SAA (*M* = 3.86) than any other academic program. Responses from students in the Biblical Studies or Theology programs rated the SAA lower than any other academic program (*M* = 2.42). Responses from students in the Criminal Justice program produced the highest mean rating for the Orientation Course (*M* = 3.39) out of all academic programs in the comparison. Responses from students in the Information Systems Management program produced the lowest mean for the Orientation Course (*M* = 2.40). Mean ratings from students in the Criminal Justice program also exceeded the other

academic programs for the Revised Calendar (*M* = 3.82). Whereas, responses from those in the Organizational Management programs produced the lowest mean for the Revised Calendar (*M* = 3.40). The average rating for BBAY was highest in the Education department (*M* = 4.15) and lowest in the Information Systems Management program (*M* = 3.71). Table A9 reports these mean ratings.

Table A9: Persistence Influence Ratings by Academic Program

	SAA Tuition Rebate	Orientation Course	Revised Calendar	BBAY Fin. Aid
Accounting	3.80, *n* = 156	2.52, *n* = 143	3.55, *n* = 165	3.92, *n* = 158
Biblical Studies/Theology	3.42, *n* = 780	2.97, *n* = 741	3.60, *n* = 812	3.87, *n* = 758
Business Administration	3.77, *n* = 492	3.00, *n* = 465	3.68, *n* = 529	4.02, *n* = 487
Computer I. T.	3.53, *n* = 86	3.11, *n* = 88	3.70, *n* = 99	3.76, *n* = 87
Criminal Justice	3.68, *n* = 179	3.39, *n* = 176	3.82, *n* = 190	3.92, *n* = 171
Education	3.86, *n* = 215	2.84, *n* = 207	3.67, *n* = 226	4.15, *n* = 220
Healthcare Administration	3.66, *n* = 436	2.84, *n* = 419	3.67, *n* = 475	4.07, *n* = 455
Human Resources	3.68, *n* = 166	3.03, *n* = 163	3.74, *n* = 168	4.10, *n* = 161
Information Systems Mgt.	3.49, *n* = 69	2.4, *n* = 60	3.41, *n* = 70	3.71, *n* = 61
Organizational Mgt.	3.48, *n* = 313	2.68, *n* = 327	3.40, *n* = 348	3.80, *n* = 321
Psychology	3.79, *n* = 1074	2.98, *n* = 1013	3.67 *n* = 1122	4.05, *n* = 1057

n = Number of survey responses

The study then grouped persistence influence ratings by cumulative grade point average (GPA). The study created five distinct groups based on GPA: Exactly zero, greater than zero and less than two, greater than or equal to two and less than three, greater than or equal to three and less than four, and exactly four. All five GPA groups rated BBAY the most influential and the Orientation Course the least influential. The four groups with GPAs above zero produced similar means for the SAA (ranged from *M* = 3.58 to *M* = 3.69). The mean influence rating for the SAA from students with a GPA of zero was much lower (*M* = 3.14). For the Orientation Course, students in the zero to two GPA range produced the highest mean (M = 3.30) and students in the three to less than four range averaged the lowest (*M* = 2.83). When divided into two groups, students

with GPAs under two rated the Orientation Course at (*M* = 3.22, *n* = 277), while those with GPAs of two or higher rated it at (*M* = 2.87, *n* = 4187). However, after isolating these two groups to students who had taken the new Orientation Course, those with GPAs under two averaged (*M* = 3.34, *n* = 187), while those with GPAs two and higher averaged (*M* = 3.27, *n* = 1747). Many of those students with higher GPAs had not taken the new Orientation Course, which is the reason that the overall mean for those students on the influence of the Orientation Course was so low (*M* = 2.87). 1,593 responses from students who had never taken any Orientation Course at MMU and had GPAs of two or higher rated the Orientation Course at (*M* = 2.45), and an additional 418 selected Not Applicable or skipped the question. For the Revised Academic Calendar, students in the zero to two GPA range produced the highest mean influence rating (*M* = 3.86) while those with GPAs of zero rated it the lowest (*M* = 3.47). The lower ratings for students with GPAs of zero can be attributed to the fact that every one of them started in 2017 and therefore had not experienced the previous academic calendar. Table A10 presents this information.

Table A10: Mean Persistence Influence Ratings by GPA

	Tuition Rebate	Orientation Course	Revised Calendar	BBAY
0	3.14, *n* = 113	3.10, *n* = 111	3.47, *n* = 122	3.51, *n* = 114
0>< 2.0	3.58, *n* = 173	3.30, *n* = 166	3.86, *n* = 178	3.94, *n* = 170
2.0-2.99	3.67, *n* = 1004	3.00, *n* = 920	3.63, *n* = 1027	4.01, *n* = 1007
3.0-3.99	3.69, *n* = 2785	2.83, *n* = 2686	3.63, *n* = 2999	4.00, *n* = 2815
4.0	3.66, *n* = 615	2.89, *n* = 576	3.57, *n* = 652	3.89, *n* = 576

The study expanded upon the disaggregation of results according to Tuition Rebate status, as introduced discussed in Chapter Four under Research Question 2. Tuition Rebate status comprised three groups: students who received the SAA Tuition

Rebate in 2017, those eligible who did not receive it, and those categorically ineligible for it (military and veterans). Students receiving the SAA rated it as (M = 3.91, n = 2765). Students categorically eligible for the SAA who did not receive it rated it as (M = 3.70, n = 1231). Students categorically ineligible for it rated it as (M = 2.44, n = 514). Differences in proportions Z tests revealed statistically significant differences between each of those means, with the greatest significance between students not eligible for it and those two groups eligible for it. The first Z test showed that students receiving the SAA (M = 3.91) rated it as more influential on their persistence than those eligible who did not receive it (M = 3.70) (z = 2.9, p < .01, two-tailed). The second Z test revealed the most statistically significant difference out of all comparisons regarding receipt of SAA: those receiving it (M = 3.91) and those categorically ineligible for it (M = 2.44) (z = 12.6, p < .001, two-tailed). It is important to note that students eligible for the SAA who did not receive it (M = 3.70), perceived themselves to be statistically significantly more influenced by it than those ineligible for it (M = 2.44) (z = 9.9, p < .001, two-tailed). The three groups according to SAA status produced several more statistically significant findings across the Likert survey questions. Students receiving the SAA (M = 2.95) rated the Orientation Course as more influential than those not receiving the SAA (M = 2.56, P = .512) (z = 3.8, p < .001, two-tailed). Likewise, students eligible but not receiving the SAA also rated the Orientation Course as more influential than those not eligible for the SAA (M = 2.56, P = .512) (z = 4.0, p < .001, two-tailed). Students receiving the SAA (M = 4.10, P = .820) rated BBAY as more influential than students ineligible for the SAA (M = 3.38, P = .676) (z = 7.4, p < .001, two-tailed). Students eligible for the SAA who did not receive it (M = 3.99, P = .798) also rated BBAY as more influential than students

ineligible for the SAA (M = 2.56, P = .512) (z = 5.7, p < .001, two-tailed). Students ineligible for the SAA (M = 4.17, P = .834) rated their confidence that MMU is the right school for them significantly higher than students eligible for the SAA who did not receive it (M = 4.00, P = .800) (z = 2, p < .05, two-tailed). The results of three differences in proportions Z tests proved that students receiving the SAA rated loyalty to the school (M = 4.34, P = .868), likelihood of returning next semester (M = 4.78, P = .956), and likelihood of earning a degree at MMU (M = 4.80, P = .960) significantly higher than students eligible for the SAA who did not receive it (M = 4.21, P = .842) (M = 4.70, P = .940) (M = 4.69, P = .938) (z = 2.2, p < .05, two-tailed) (z = 2.1, p < .05, two-tailed) (z = 2.9, p < .01, two-tailed). Additionally, students receiving the SAA (M = 4.80, P = .960) rated the likelihood of earning a degree at MMU significantly higher than students ineligible for the SAA (M = 4.70, p = .940). This data suggests that receipt of the SAA may motivate students to continue their studies at MMU. Table A11 displays these mean ratings and Z test results.

Table A11: Persistence Influence Ratings by Receipt of SAA in 2017

Survey Question	Yes	*n*	E/N	*n*	No	*n*	*Z* test Y/EN	*Z* test Y/N	*Z* test EN/N
A-Influence of Tuition Rebate on Persistence	3.91	2765	3.70	1231	2.44	514	$z = 2.8$, $p < .01$	$z = 12.6$, $p < .001$	$z = 9.9$, $p < .001$
B-Influence of Orientation Course on Persistence	2.95	2667	3.03	1133	2.56	748	$z = .9$, $p > .05$	$z = 3.8$, $p < .001$	$z = 4.0$, $p < .001$
C-Influence of Revised Academic Calendar	3.63	2941	3.65	1273	3.57	856	$z = .27$ $p > .05$	$z = .69$ $p > .05$	$z = .81$ $p > .05$
D-Influence of BBAY Financial Aid Model	4.10	2882	3.99	1226	3.38	664	$z = 1.6$ $p > .05$	$z = 7.4$ $p < .001$	$z = 5.7$ $p < .001$
F-Confidence this is the right school for me	4.07	2949	4.00	1276	4.17	863	$z = 1.1$ $p > .05$	$z = 1.4$ $p > .05$	$z = 2.0$ $p < .05$
G-Loyalty to this school	4.34	2926	4.21	1269	4.23	859	$z = 2.2$ $p < .05$	$z = 1.6$ $p > .05$	$z = .25$ $p > .05$
H-Likelihood of returning next term	4.78	2868	4.70	1254	4.72	846	$z = 2.1$ $p < .05$	$z = 1.4$ $p > .05$	$z = .39$ $p > .05$
I-Likelihood of earning degree at this school	4.80	2948	4.69	1278	4.70	864	$z = 2.9$ $p < .01$	$z = 2.3$ $p < .05$	$z = .19$ $p > .05$

Yes = Received the Tuition Rebate in 2017
E/N = Categorically eligible for the Tuition Rebate but did not receive it
No = Not eligible for the Tuition Rebate (Active Military and Veteran)

The study then disaggregated the persistence survey results by Orientation Course status: those currently enrolled in the orientation course, those that had already successfully completed it, and those that had never taken it. Students who had never taken an orientation course at MMU rated the influence of the Tuition Rebate ($M = 3.45$, $P = .690$) and the Orientation Course ($M = 2.46$, $P = .492$) significantly lower than students currently in the course ($M = 3.86$, $P = .772$) ($M = 3.63$, $P = .726$) and those that had already completed it ($M = 3.82$, $P = .764$) ($M = 3.25$, $P = .650$), according to differences in proportions *Z* tests, as shown in Table 40. Note that an additional 450 students that had never taken the course rated the Orientation Course as Not Applicable, which if factored as Little to No Influence, would have lowered their mean rating even more. Those that had never taken the Orientation Course ($M = 4.23$, $P = .846$) also rated their Loyalty to MMU significantly less than those that had successfully completed the

course (M = 4.35, P = .870), according to a differences in proportions Z test (z = 2.13, p < .05, two-tailed). Students that had never taken the course also produced the lowest mean rating for Likelihood of Returning Next Term (M = 4.70, P = .940). This difference proved to be significantly lower than students currently in the Orientation Course (M = 4.85, P = .970), according to a differences in proportions Z test (z = 2.57, p < .05, two-tailed). Table A12 displays these results.

Table A12: Persistence Influence Ratings by Orientation Course Completion

Survey Question	In	*n*	Yes	*n*	No	*n*	*Z* test I/Y	*Z* test I/N	*Z* test Y/N
A-Influence of Tuition Rebate on Persistence	3.86	262	3.82	1700	3.45	1895	z = .3, p > .05	z = 2.9, p < .01	z = 5, p < .001
B-Influence of Orientation Course on Persistence	3.63	264	3.25	1695	2.46	*1687	z = 2.6, p < .05	z = 7.8, p < .001	z = 9.4, p < .001
C-Influence of Revised Academic Calendar	3.76	264	3.63	1764	3.56	2059	z = .91 p >.05	z = 1.4 p >.05	z = .96 p >.05
D-Influence of BBAY Financial Aid Model	3.93	260	4.03	1687	3.91	1899	z = .74 p >.05	z = .15 p >.05	z = 1.8 p >.05
F-Confidence this is the right school for me	4.08	268	4.10	1756	4.02	2093	z = .16 p >.05	z = .48 p >.05	z = 1.3 p >.05
G-Loyalty to this school	4.26	262	4.35	1748	4.23	2078	z = .77 p >.05	z = .26 p >.05	z = 2.13 p <.05
H-Likelihood of returning next term	4.85	268	4.75	1751	4.70	2001	z = 1.7 p >.05	z = 2.57 p <.05	z = 1.3 p >.05
I-Likelihood of earning degree at this school	4.77	268	4.76	1764	4.71	2088	z = .15 p >.05	z = .87 p >.05	z = 1.4 p >.05

In = Currently enrolled in orientation course
Yes = Already successfully completed orientation course
No = Never taken orientation course
* An additional 450 student surveys responded with Not Applicable

The study next disaggregated by students receiving the Pell grant and those not receiving it. Receipt of the Pell serves as an indicator of financial aid receipt. Students fell into one of two groups: received the Pell this term, did not receive the Pell this term. The study applied this grouping to all seven Likert questions on the Persistence Survey. Regarding the influence of the Tuition Rebate, 2,614 responses netted a mean of (M = 3.79) for students receiving the Pell, while 2,165 responses from students who did not

receive the Pell produced a mean of (*M* = 3.52). After converting the means to proportions, a differences in proportions *Z* test run revealed that students receiving the Pell (*M* = 3.79, *P* = .758) rated the Tuition Rebate significantly higher than those not receiving it (*M* = 3.52, *P* = .704) (*z* = 4.2, *p* < .001). 2,479 responses on Question B from students receiving the Pell also produced significantly higher results on the influence of the Orientation Course as significantly more influential (*M* = 3.00, *P* = .600) than the 2,109 responses from students not receiving the Pell (*M* = 2.79, *P* = .558) (*z* = 2.9, *p* < .01,). 2,670 responses from students with the Pell rated the influence of the Revised Calendar (*M* = 3.62, *P* = .724) insignificantly less than students without the Pell (*M* = 3.63, *P* = .726) (*z* = .16, *p* > .05, two-tailed). 2,669 responses from students with the Pell rated the BBAY Financial Aid Model (*M* = 4.13, *P* = .826) significantly higher than those not receiving the Pell in this term (*M* = 3.78, *P* = .756) (*z* = 5.9, *p* < .001, two-tailed). Receipt of Pell did not produce statistically significant differences in the means of Question F between students receiving the Pell (*M* = 4.06, *P* = .812) and those not receiving it (*M* = 4.08, *P* = .816) (*z* = .37, *p* > .05, two-tailed). Differences in proportions *Z* tests found slightly significant differences between the two groups on Questions G, H, and I). 2,646 responses from students with the Pell averaged (*M* = 4.34, *P* = .868), significantly higher than the 2,408 responses from students without the Pell (*M* = 4.24, *P* = .848) (z = 2.03, p < .05, two-tailed). A second differences in proportions *Z* test found the 2,625 responses from students with the Pell averaged (*M* = 4.78, *P* = .956), significantly higher than the 2,343 responses from students without the Pell (*M* = 4.71, *P* = .942) (*z* = 2.23, *p* < .05, two-tailed). And a third differences in proportions *Z* test found the 2,671 responses from students with the Pell averaged (*M* = 4.79, *P* = .958),

significantly higher than the 2,419 responses from students without the Pell (M = 4.73, P = .946) (z = 1.99, p < .05, two-tailed). Table A13 reports these findings.

Table A13: Persistence Influence Ratings by Financial Aid Status

Survey Question	Yes	*n*	No	*n*	*Z* test Y/N
A-Influence of Tuition Rebate on Persistence	3.79	2614	3.52	2165	z = 4.2, p < .001
B-Influence of Orientation Course on Persistence	3.00	2439	2.79	2109	z = 2.9, p < .01
C-Influence of Revised Academic Calendar	3.62	2670	3.63	2400	z = .16, p >.05
D-Influence of BBAY Financial Aid Model	4.13	2669	3.78	2103	z = 5.9, p <.001
F-Confidence this is the right school for me	4.06	2668	4.08	2420	z = .37, p >.05
G-Loyalty to this school	4.34	2646	4.24	2408	z = 2.03, p <.05
H-Likelihood of returning next term	4.78	2625	4.71	2343	z = 2.23, p <.05
I-Likelihood of earning degree at this school	4.79	2671	4.73	2419	z = 1.99, p <.05

Yes = Received Pell grant for term
No = Did not receive Pell grant for term

Appendix J

Detailed Disaggregation of Completion Survey Results

Disaggregating the mean survey scores by gender did not reveal any statistically significant differences between males and females. However, a larger sample size would have likely demonstrated a statistically significant higher mean for males regarding the likelihood of returning to school (Question F) and the likelihood of returning to MMU (Question G). The mean ratings for males exceeded the mean of females by over half a point in both cases, as males rated (M = 4.22) to the female mean rating of (M = 3.67) on Question F, and (M = 4.11) to (M = 3.56) on Question G. Table A14 presents these results.

Table A14: Likert Ratings on Completion by Gender

	Mean Rating (1-5)		# of Ratings	
Completion Survey Question	F	M	F	M
A-Influence of Tuition Rebate on Completion	3.24	3.29	37	17
B-Influence of Orientation Course on Completion	2.34	2.38	35	16
C-Influence of Revised Calendar on Completion	3.21	3.06	43	18
D-Influence of Financial Aid Model on Completion	3.46	3.50	37	18
F-Likely to Pursue Additional Degree/Cert.	3.67	4.22	42	18
G-Likely to Return to This School	3.56	4.11	41	18

Disaggregating the mean survey scores by receipt of Pell grant during term did not reveal any statistically significant differences. However, a larger sample size would have likely demonstrated a statistically significant higher mean for students not receiving the grant regarding the influence of the Orientation Course (M = 2.58) compared to students receiving the grant (M = 2.12). Likewise, a larger sample size would have likely revealed a statistically significant higher mean for students receiving the grant

regarding the influence of the Financial Aid Model (*M* = 3.71) compared to students not receiving the grant (*M* = 3.22). The other questions did not reveal as dramatic of differences between the two groups. See Table A15 for this information.

Table A15: Likert Ratings on Completion by Receipt of Pell During Term

	Mean Rating (1-5)		# of Ratings	
Completion Survey Question	Pell	No Pell	Pell	No
A-Influence of Tuition Rebate on Completion	3.44	3.07	27	27
B-Influence of Orientation Course on Completion	2.12	2.58	25	26
C-Influence of Revised Calendar on Completion	3.22	3.12	27	34
D-Influence of BBAY on Completion	3.71	3.22	28	27
F-Likely to Pursue Additional Degree/Cert.	3.68	3.99	28	32
G-Likely to Return to This School	3.64	3.79	25	34

The study then compared students who received the Tuition Rebate in 2017 to those who did not. Students receiving the rebate in 2017 rated the influence of it on their completion as *M* = 3.51 compared to a mean of only 2.6 for students not receiving it. An independent samples *t*-test demonstrated that the difference between the mean for students receiving the SAA rebate in 2017 (*M* = 3.51) over those who did not (*M* = 2.6) was statistically significant (t [52] = 2.1, $p < .05$, two-tailed). Although some noticeable differences appeared, none of the other questions produced statistical significance when comparing students receiving the rebate in 2017 to those who did not. Students receiving the rebate rated the influence of the Orientation Course almost the same as those that did not receive the rebate (*M* = 2.36 versus *M* = 2.33). Students not receiving the rebate rated the influence of the Revised Academic Calendar more highly (*M* = 3.43 versus *M* = 3.00). Students receiving the rebate rated the influence of BBAY more highly (*M* = 3.63 versus *M* = 3.12). Students receiving the rebate rated themselves as less likely to pursue additional formal education (*M* = 3.62 versus *M* = 4.17), but more likely to do so at

MMU if they did decide on more education (*M* = 3.80 versus *M* = 3.63). Table A16 reports these results.

Table A16: Likert Ratings on Completion by Receipt of 2017 Tuition Rebate

	Mean Rating (1-5)		# of Ratings	
Completion Survey Question	SAA	No SAA	SAA	No
A-Influence of Tuition Rebate on Completion	3.51	2.6	39	15
B-Influence of Orientation Course on Completion	2.36	2.33	33	18
C-Influence of Revised Calendar on Completion	3.00	3.43	38	23
D-Influence of BBAY on Completion	3.63	3.12	38	17
F-Likely to Pursue Additional Degree/Cert.	3.62	4.17	37	23
G-Likely to Return to This School	3.80	3.63	35	24

The study disaggregated the completion survey scores into two groups based on grade point average (GPA): students with less than a 3.5 cumulative GPA and students with a 3.5 or higher. The students with lower GPAs rated all four initiatives as more influential on their completion than students with high GPAs: Tuition Rebate (*M* = 3.59) to (*M* = 3.03), Orientation Course (*M* = 3.0) to (*M* = 1.94), Revised Calendar (*M* = 3.42) to (*M* = 3.0), and BBAY Financial Aid Model (M = 3.58) to (*M* = 3.39). Students with higher GPAs rated themselves as more likely than students with lower GPAs to pursue additional schooling (*M* = 3.92) to (*M* = 3.71) and to potentially return to MMU (*M* = 3.85) to (*M* = 3.56). Only one of the initiatives demonstrated statistical significance in the difference between the two GPA groupings. An independent samples *t*-test produced significantly higher mean ratings for students with lower GPAs (*M* = 3.0) than students with high GPAs (*M* = 1.94) regarding the influence of the Orientation Course (t [49] = 2.8, $p < .01$, two-tailed). Table A17 presents these mean ratings.

Table A17: Likert Ratings on Completion by GPA

	Mean Rating (1-5)		# of Ratings	
Completion Survey Question	< 3.5	≥ 3.5	<	≥
A-Influence of Tuition Rebate on Completion	3.59	3.03	22	32
B-Influence of Orientation Course on Completion	3.00	1.94	20	31
C-Influence of Revised Calendar on Completion	3.42	3.00	24	37
D-Influence of BBAY on Completion	3.58	3.39	24	31
F-Likely to Pursue Additional Degree/Cert.	3.71	3.92	24	36
G-Likely to Return to This School	3.56	3.85	25	34