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Institutional Budget Function Allocations as Predictors of Performance Outcomes of Tennessee Public Community Colleges and Universities

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Institutional Budget Function Allocations as Predictors of Performance Outcomes of Tennessee Public Community Colleges and Universities

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by

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ABSTRACT

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With the increased use of performance funding in Tennessee and many other states, it is imperative that administrators strategically budget to meet performance outcome goals. The purpose of this research was to determine the relationship between the budget function allocations of Instruction, Academic Support, and Student Services and performance outcome measures involving student success factors defined as completion of credit hours, awards of technical certificates, and awards of undergraduate degrees through the academic years of 2006-07 and 2013-14. The population included the 13 public community colleges and 9 public universities in Tennessee within the Tennessee Board of Regents and the University of Tennessee systems. Statistical procedures included bivariate correlations and multiple regressions of the predictor variables of budget function allocations and the criterion variables of performance outcomes.

Descriptive data indicated an increase in the majority of the budget function area means and decreases in the majority of performance outcomes over the timeframe of the study. Correlation analysis of community college predictor and criterion variables revealed significant positive relationships existed between the following: (a) salary allocations for Student Services and awards of technical certificates; and (b) allocations for salaries for Instruction and completion of credit hours and number of associate degrees awarded. Multiple regression analysis of community

college variables indicated salaries of Instruction were the most useful predictor of performance outcomes.

Correlation analysis of university predictor and criterion variables revealed significant negative relationships existed between the following: (a) operations for Student Services and completion of 24, 48, and 72 credit hours; (b) salaries for Student Services and completion of 24, 48, and 72 credit hours and number of bachelor degrees awarded; (c) salaries of Academic Support and completion of 24 and 48 credit hours; (d) operations budgets for Instruction and completion of 24, 48, and 72 credit hours; (e) budget allocations for salaries for Instruction and completion of 24 credit hours; and (f) combined budget allocations and completion of 24 and 48 credit hours. Correlation analysis of university predictor and criterion variables revealed significant positive relationships existed between operations budgets for Academic Support and completion of 72 credit hours and number of bachelor degrees awarded

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CHAPTER 1

INTRODUCTION

"Budgets are really a statement of educational purpose phrased in fiscal terms" (Mayhew, 1979, p. 54). This quote is germane today as funding for public institutions of higher education in the United States and much of the world transitions to systems of performance outcome factors of student success and retention rather than exclusively on enrollment (Talbert, 2012). The transformation to more reliance on performance funding began as local and state economies emerged from the recession of 2008 and legislators sought financial accountability in all state-supported institutions and programs including colleges and universities. Development of the latest performance funding models arose not only from economic necessity but also declining graduation and success rates and forecasts of skilled workforce shortages as well (Talbert, 2012). In 2008 attrition rates for community college students approached 50% (Center for Community College Student Engagement [CCCSE], 2009). Compounding the situation, state support of higher education has steadily declined since 2005; in Tennessee, for example, approximately 40% of institutional revenue is provided by the state with the remaining balance coming from student tuition, student fees, and other sources (Tennessee Higher Education Commission [THEC], 2014a). Since 2010, 16 states have inaugurated appropriations models for 100% of allocations to institutions of higher education that include the variables degree attainment and course completion rates. Complete College America, a nonprofit organization devoted to the improvement of higher education levels in the United States, predicted the total would grow to 25 states by 2016 (Complete College America, 2014).

Performance funding is not a new concept as Tennessee implemented a limited variant of outcomes based funding in 1979. This model was used as a template for funding systems by Connecticut in 1985, Missouri in 1991, and Kentucky in 1992 (McLendon & Hearn, 2013). Many European and Asian countries have adopted performance funding models with varying results (Frolich, Evanthia, & Rosa, 2010; Jongbloed & Vossensteyn, 2001). The Tennessee original performance funding model was an incentive tool rather than a performance monitoring mechanism as it was on a volunteer basis and constituted a maximum of 2% of the total unrestricted allocations for an institution with the balance determined by enrollment (THEC, 2014a). By 2001, 25 states had adopted this incentive tool of performance funding. The Complete College Tennessee Act (CCTA) of 2010, developed in coordination with Complete College America led Tennessee community colleges and universities to focus on new, transformative objectives through implementation of performance outcomes funding formula that accounted for 100% of all state appropriations to Tennessee community colleges and universities (The Complete College Tennessee Act [CCTA], 2010). Improving student success and retention are the core goals of Tennessee performance outcomes funding evidenced by the outcome factors of graduation rates, completion of credit hours, remedial success, dual enrollment, and job placement of graduates (Tennessee Higher Education Commission [THEC], 2014b). The outcomes based approach to resource allocations differs from previous systems that compensated institutions primarily for the number of enrolled students and relied upon increased access to increase enrollment (THEC, 2014a). Institutional changes required to meet outcome based objectives are not without costs (Doochin, 2013). Community colleges are more prone to financial hardship than 4-year universities due to a greater dependence on state appropriations and the lack of substantial endowments and private donations (Barr & McClellan, 2011). A

2008 survey conducted by the National Council of State Directors of Community Colleges showed that community college budgets were in weakened financial conditions before fully absorbing the impact of the 2008 recession and were soon thereafter subjected to performance funding measures (Katsinas & Tollefson, 2009). McClenney and Dare (2013, p. 45) state, "It is impossible to deny the severe financial constraints under that community colleges are attempting to do perhaps the most challenging work in higher education".

The primary goals of outcomes-based performance funding are to increase student retention and graduation rates by providing efficacious economic inducement and enforcing financial penalties to institutions of higher education. Justifications for the objectives of increasing retention and graduation rates are founded in average retention rates for community colleges in the United States of 53% and Tennessee at 51.2% (National Center for Higher Education Management Systems [NCHEMS], 2015). Student retention is a complex phenomenon with some contributing factors attributable to the institution (Bean, 1985; CCCSE, 2009; Chickering & Gamson, 1989; Corso & Devine, 2013; Law, 2014; Maher & Macallister, 2013). However, other factors leading to attrition are inherent in the personal background and characteristics of individual students (Shakeshaft et al., 2013; Tinto, 1975; Ward et al., 2014). Budget allocations designed to increase social connectedness within cohorts and between students and the colleges were found to be the most effective in retention efforts (Bean, 1985; CCCSE, 2009; Chickering & Gamson, 1989). To improve student success and maintain financial stability many schools developed new initiatives and strategic plans leading to the reallocation of resources (McClenney & Dare, 2013) and reassignment of personnel (Doochin, 2013; Zarkesh & Beas, 2004). Implementation of these plans included the purchase of new

technologies designed to enhance student engagement, communications, and learning (Atwater, 2014; Tampke, 2013).

The literature indicates performance funding models are ineffective instruments for improvement of student success outcomes (Tandberg, Hillman, & Barakat, 2014). In fact, the policies may contribute to declines in performance outcomes (Rutherford & Rabovsky, 2014). Tennessee community colleges and universities are directed by CCTA to improve student success and retention as demonstrated by performance outcomes (THEC, 2014a). However, clear, effective financial strategies to meet these goals were not provided to college administrators as guidelines for development of annual budgets. A limited number of correlational studies have been conducted on the relationships between student success and institutional budget allocations related to performance funding. Therefore, more exploration is needed to satisfy gaps in the research and to truly understand the influence of financial resource allocations on performance outcomes for Tennessee public community college and universities.

Statement of the Problem

The Complete College Tennessee Act of 2010 transformed the resource allocation system for Tennessee public community colleges and universities from the incentive model (5.45% for supplemental funding) to a performance model (100% of state appropriations) (CCTA, 2010; THEC, 2014a). As policy makers in Tennessee continue to review this funding formula and other states are implementing performance outcomes based funding, it is imperative that administrators at the institutional and systems level appropriate limited state funds in the most efficient and effective manner to improve student success (Doochin, 2013; Griffin, 2013; Thompson & Riggs, 2000). Therefore, the purpose of this nonexperimental quantitative study is

to investigate the relationships between budget functions and performance outcomes for the 13 Tennessee Board of Regents community colleges, six Tennessee Board of Regents Universities, and three University of Tennessee universities.

Research Questions

The study addressed several Research Questions to investigate the relationships between budget functions and performance outcomes of community colleges and universities.

1. Is there a significant relationship between operational budget allocations for Student Services per FTE at the 13 public community colleges of Tennessee and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, and completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?
2. Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?
3. Is there a significant relationship between operational budget allocations for Academic Support per FTE at 13 Tennessee's public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit

hours, number of technical certificates awarded, and number of associate degrees awarded)?

4. Is there a significant relationship between salary budget allocations for Academic Support a per FTE at Tennessee's 13 public community colleges and student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?
5. Is there a significant relationship between operational budget allocations for Instruction per FTE at 13 Tennessee's public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?
6. Is there a significant relationship between salary budget allocations for Instruction per FTE at 13 Tennessee's public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?
7. Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's 13 public community colleges and student success as

measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

8. Is there a significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?
9. Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?
10. Is there a significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?
11. Is there a significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students

completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

12. Is there a significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?
13. Is there a significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?
14. Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?
15. To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's 13 public community colleges predict student success

as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded and number of associate degrees awarded)?

16. To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's nine public universities predict student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

Significance of the Study

This study is significant in that state and local appropriations per FTE for higher education have steadily waned over the last 15 years with declines of 5.1% in 2009 and 7.1% in 2010 (State Higher Education Executive Office, 2011). This augmented burden of finance is now directly linked to performance outcomes measures of student progression and completion (Griffin, 2013; THEC, 2014a). By fiscal necessity Tennessee community colleges and universities have developed goals for improving these measures and subsequently altering annual budget function allocations (Doochin, 2013; Tandberg et al., 2014). Consequently, community colleges, universities, and higher education systems across the United States will benefit from this study by comprehending the most effective budget strategies for operating in an outcome based performance funding system.

Limitations and Delimitations

This study is delimited to the public community colleges and universities operating in the state of Tennessee for the academic years of 2006-07 through 2013-14. This study is specific to the public community colleges and universities in Tennessee and may not be generalizable to institutions outside of the state of Tennessee. It is assumed that institutional budget function allocations contain reliable data and that each institution accounted allocations to budget functions in similar fashion. It is also assumed that the methodology adequately addressed the Research Questions. Another delimitation is the pairings of predictor variables, budget function allocations, and the criterion variables, performance outcomes, by academic year. Completion and graduation time frames fluctuate between individual students and this study did not account for progression and retention of specific students or specific cohorts of students. The chronological pairings of budget function allocations and performance outcome measures were derived by typically accepted completion timelines. A limitation in the criterion variables exists as no accounting was discernable for the individual characteristics of students such as high school GPA, ACT scores, SAT scores, or family support as related to performance outcomes or individual institutional entrance requirements.

A final potential delimitation is the role of the researcher. The author has been an employee of Columbia State Community College since 1998 and has served as an academic dean since 2010. In capacity as dean, the author has firsthand knowledge of performance outcomes and budgets for public higher education institution. However, the positive aspect of this familiarity with the system supersedes any negative considerations.

Definition of Terms

1. Complete College Tennessee Act of 2010 (CCTA): A comprehensive reform agenda by the state of Tennessee designed to transform higher education through changes in fiscal, administrative, and academic polices (THEC, 2014b).
2. Performance Funding: A method of allocation of funds based upon student performance outcome measures involving completion, retention, and graduation rates (THEC, 2014b).
3. Performance Outcomes: Institutional student performance measures including completion of credit hours at critical points in academic careers and awards of certificates and degrees (THEC, 2014b).
4. Full Time Equivalent (FTE): A standardized metric for measuring enrollment in colleges and universities that includes total enrollment by head count and credit hours (National Center for Educational Statistics [NCES], 2015a).
5. Retention Rate: A measure of the rate at that students persist in their educational programs at an institution, expressed as a percentage. The percentage is calculated based upon the number of fall enrolled first-time, degree-seeking freshmen who return for the following fall semester (NCES, 2015a).
6. Graduation Rate: The percentage of students within a revised adjusted cohort who complete an academic program within 150% of the normal time (NCES, 2015a).
7. Tennessee Higher Education Commission (THEC): The Tennessee Higher Education Commission was established in 1967 by the Tennessee General Assembly as a coordinator and financial administrator of higher education (THEC, 2014a).

8. Tennessee Board of Regions (TBR): One of two governing bodies of higher education in Tennessee that oversees 26 colleges of applied technology, 13 community colleges, and 6 universities (Tennessee Board of Regents [TBR], 2015a).
9. University of Tennessee: One of two governing bodies of higher education in Tennessee that oversees three universities, an agricultural extension service, research centers, and medical schools (University of Tennessee, 2015).
10. Academic Support: A functional expense category that includes expenses of activities and services that support the institution's primary missions of instruction, research, and public service. It includes the retention, preservation, and display of educational materials (for example, libraries, museums, and galleries) and organized activities that provide support services to the academic functions of the institution (NCES, 2015a).
11. Student Services: A functional expense category that includes expenses for admissions, registrar activities, and activities whose primary purpose is to contribute to student emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instructional program. (NCES, 2015a).
12. Instruction: A functional expense category that includes expenses of the colleges, schools, departments, and other instructional divisions of the institution and expenses for departmental research and public service that are not separately budgeted. Includes general academic Instruction, occupational and vocational Instruction, community education, preparatory and adult basic education, and regular, special, and extension sessions. Also includes expenses for both credit and noncredit activities. Excludes expenses for academic administration where the primary function is administration (NCES, 2015a).

Summary

This quantitative study is presented in five related chapters. Chapter 1 contains an introduction to the study and includes a description of its relevance and purpose, the statement of the problem, research questions, limitations and delimitations, definitions of terms, and a brief overview of the study. Chapter 2 provides a review of the literature related to performance funding, institutional allocations, and performance outcomes related to student retention and student success. Chapter 3 is a description of the study design, population, data collection methodology, and procedures for data analysis. Chapter 4 is a description and presentation of the data related to the research questions. Chapter 5 contains a summary of findings for the study, conclusions, and recommendations for policy and practice, and further research.

CHAPTER 2

REVIEW OF LITERATURE

Resource allocation processes in higher education can be scrutinized by four measures in an economic model: (a) goals can be identified that result in increases in decision maker satisfaction; (b) where multiple decision makers are involved, a means can be found to select from among conflicting participant goals; (c) enough goal stability exists that optimal resource allocation remains fairly stable; and (d) increases in resources devoted to pursuing goals can be related to recognizable outputs (Tuckman & Chang, 1990). Community college and university administrators must be cognizant of the fourth measure of the Tuckman and Chang (1990) model in computation of appropriations per functional area due to the importance of performance outcome constructs resulting from implementation of performance funding models (Talbert, 2012).

Sixteen states have implemented funding models for colleges and universities involving student performance measures including degree attainment and course completion rates. Complete College America, a nonprofit organization funded by private donations and grants devoted to the improvement of higher education, predicted the total would grow to 25 states by 2016 (Complete College America, 2014). As local and state economies emerged from the recession of 2008, the public and legislators sought financial accountability in all state-supported institutions and programs including colleges and universities. Governments undertook action as these economic circumstances coincided with decreased graduation rates at institutions of higher education and dire forecasts of an insufficient labor force in the near future (Talbert, 2012). National attrition rates for community college students approached 50% during this time period

(CCCSE, 2009). The idea of outcome based or performance funding is not new or unique to the United States as Tennessee implemented the first such program in the late 1970s and several other nations have developed similar systems (Banta, Rudolph, Van Dyke, & Fisher, 1996).

The Tennessee model underwent a metamorphosis by decree of the Complete College Tennessee Act of 2010 (CCTA, 2010). This legislation was designed to motivate Tennessee community colleges and universities to focus on performance objectives of student success and retention by implementation of a performance outcomes funding formula (CCTA, 2010). This approach to resource allocations differed from the previous systems that compensated institutions primarily on the number of enrolled students and relied on increased student access to achieve that goal (THEC, 2014a).

CCTA implementation resulted in a mobilization of programs and services to meet the goals of the initiative (Doochin, 2013). Similar changes occurred in other state systems resulting in allocations for development and implementation of new student engagement activities that were viewed to impact retention and graduation such as orientation, college experience courses, early alert systems, and student tracking software (Law, 2014). Instructional and Academic Support allocations led to the creation and implementation of tools to aid retention and graduation, such as web based developmental courses, mobile device instruction, and teleconferencing course delivery (Atwater, 2014) This literature review explores the history and latest trends in performance outcomes funding in higher education including the embedded core goals of improving student success and retention. Additionally, the literature review is an examination of the existing scholarship related to budget function allocations as predictors of performance outcomes.

History of Performance Outcome Funding

Performance Outcome Funding in the United States

The first formal performance outcome funding program was initiated in Tennessee in 1979 followed by Connecticut in 1985, Missouri in 1991, and Kentucky in 1992 (McLendon & Hearn, 2013). By 2001, 25 states had adopted the format (McLendon & Hearn, 2013). In recent years the combination of declining graduation rates and the possibilities of workforce shortfalls gained the attention of such philanthropic groups as the Bill and Linda Gates Foundation, Complete College America, the Lumina Foundation, and Achieving the Dream (Hermes, 2012). These groups create awareness of issues in higher education, provide expertise, develop initiatives, and provide funding in effort to enable strategic change at the state-wide systems level with the goal of acceptance and implementation of performance outcome funding formulas throughout campuses (Hermes, 2012). Student performance during the crucial first 2 years of undergraduate enrollment is a fundamental aspect of each funding model identified by these organizations.

The range of magnitudes in current performance outcome funding formulas used in the United States is broad with Illinois determining less than 1% of the appropriations in this manner (National Conference of State Legislatures, 2015), while 100% of the state appropriations for Tennessee public higher education institutions is performance-based (THEC, 2014b).

Global Perspective of Performance Funding

Alternative types of funding for higher education is not a concept limited to the United States as demonstrated by the work done by Frølich et al. (2010) who reviewed funding system influence on institutions of higher education in the pursuit of their missions in the European countries of Denmark, Norway, and Portugal. Three types of allocation programs were identified and reviewed: input-based, output-based, and mixed. Input-based is the most widely used type with annual allocations being primarily derived from enrollment data of the previous year. Output-based programs are closely structured to performance funding in the U.S. as it includes student success rates on exams and other measures. The conclusion of the study revealed no ideal funding system exists due to the great variation in the goals each institution and system has for its students (Frølich et al., 2010). However, the trend in all countries surveyed was toward increasing use of performance outcome funding (Frølich et al., 2010). European universities operating under performance funding experienced modifications in staffing in order to enhance performance outcomes (Sörlin, 2007).

Ahmad, Farley, and Naidoo (2012) indicated that developing countries such as Malaysia followed the performance outcome funding models used in other, more industrialized nations such as Japan. The desire to improve the efficiency and effectiveness of institutions of higher education through funding reforms while promoting economic growth has led to the formulation of many policy reforms in developed and developing countries throughout Asia (Ahmad et al., 2012). In addition to student enrollment, these countries use common performance indicators for determination of funding including the quality of teaching and learning, publications, research and development, patents, and licenses (Jongbloed &Vossensteyn, 2001). The Rating System for Malaysian Higher Education Institutions is employed in Malaysia to differentiate the allocations

per institution on a 2-year basis. The Malaysia system is more intricate as it includes three generic domains, five specific domains, 25 criteria, and 82 indicators to gauge performance in comparison with the Tennessee and other United States models (Ahmad et al., 2012).

Tennessee Performance Funding

Tennessee became the first state to determine a portion of state allocations for higher education on institutional performance rather than enrollment (Banta et al., 1996). In 1979 the Tennessee Higher Education Commission (THEC) instituted a voluntary program for public community colleges and universities to earn a supplemental allocation of up to 2% of the general budget for carrying out the following activities: (1) obtaining accreditation for accreditable academic programs; (2) testing graduating students in their major fields and in general education using standardized externally developed examinations (additional credit was available for demonstrating that graduates score at or above national averages on these tests); (3) surveying enrolled students, recent graduates, and/or community members or employers to assess satisfaction with institution academic programs and Student Services; and (4) conducting peer reviews of its academic programs (Banta et al., 1996). Criteria for performance funding in Tennessee has been revised five times since 1979: 1980, 1982, 1986, 199, and 2010 (Banta et al., 1996). Over that time frame the budget supplement awarded by the program has increased from 2% to 5.45% to 100% of each institution's annual state appropriations (Banta et al., 1996).

The Complete College Tennessee Act of 2010 was passed by the Tennessee legislature in an effort to reform higher education and increase the number of credentialed citizens of the state (CCTA Summary, 2011). The significance of this law to the state of Tennessee and the

importance of proper and timely implementation were demonstrated by the 2009 selection of John Morgan as the new Chancellor for the TBR system. Mr. Morgan lacked previous professional experience in higher education but was a primary agent in the development of the CCTA and possessed financial experience (TBR, 2015b). The Complete College Tennessee Act states, "Tennessee Higher Education Commission is to develop policies for fair and equitable distribution of public funds among the state institutions of higher learning that are consistent with and further the goals of the statewide policy agenda. It also requires that the policies shall result in an outcomes-based model and the model shall emphasize outcomes across a range of variables that shall be weighted to reinforce each institution's mission and provide incentives for productivity improvements consistent with the State's higher education master plan" (Tennessee State Senate, 2010, p. 2).

Support for the legislation was evidenced in THEC data for fall 2013 as Tennessee community colleges reported a 57.8% fall-to-fall retention rate for first-time, full-time freshmen and a system wide, 6-year graduation rate of 28.6% (THEC, 2014a). CCTA is the initial element of Governor Haslam's Drive to 55 initiative for Tennessee's higher education systems that has a goal of increasing the percentage of Tennesseans with a postsecondary credential from the current level of 32% to 55% by the year 2025 (Drive to 55, 2013).

The CCTA stipulates that 100% of appropriations for publicly supported higher education institutions in Tennessee are allocated employing an equation that involves outcomes weighted according to institutional missions as indicated by Basic Carnegie Classification (THEC, 2014b). Enrollment totals and full time equivalent (FTE) numbers are included in the calculations, but account for a lower percentage of funding than the previous system (THEC, 2014b). Institutions with similar missions are assigned outcomes criteria in the same category to

ensure a nonbiased evaluation of performance indicators. Tennessee community colleges serve a wide variety of students including those wishing to transfer to universities, career technical degree seekers, and continuing education or workforce development customers (TBR, 2015a). These focal areas are reflected in the performance indicators for community colleges to include students accumulating 12 credit hours, number of dual enrollment students, job placements of graduates, students accumulating 24 credit hours, number of associates degrees granted, students transferring out with 12 credit hours, students accumulating 36 credit hours, technical certificates granted, work force training awards per 100 FTE, and remedial and developmental success (THEC, 2014b).

University outcome measures differ in accordance with mission statements and include students accumulating 24 credit hours, bachelor and associate degrees awarded, students accumulating 48 credit hours, master's and educational specialist degrees granted, students accumulating 72 credit hours, doctoral and law degrees awarded, research and service expenditures, degrees per 100 FTE, students transferring out with at least 12 credit hours, and 6-year graduation rates (THEC, 2014b). In addition to performance criteria, premiums are awarded to institutions for success on outcomes for certain targeted sub-populations including number of adult students (e.g., students over 25 years of age), low-income students (e.g., Pell Grant eligible students), and minority students (THEC, 2014b). The guidelines call for a 40% increase applied to the summation of each of these outcomes in calculation of appropriations as a means of recognition of the added support provided to these populations and the importance of the success of each group to state goals (THEC, 2014b). As an example, if 1,000 associate degrees are awarded to low-income students in a fiscal year, the allocations for the associate

degree granted category would be revalued as 1,400 for that institution. Subpopulation group statistics are self-reported by each institution while the overall performance data are collected automatically through a state database extract each semester by THEC (2014b).

Student Success and Retention

Improving student success and retention are core goals of performance funding formulas as evidenced by the outcomes factors measured (THEC, 2014b) and the need for improved efficiency in higher education (THEC, 2014b). Currently the average retention rate for community colleges in the United States is 53% and Tennessee is 51.2% (NCHEMS, 2015). Using the 2009 cohort, the United States average for 3-year graduation rates for associate degrees was 29.2% and Tennessee was 26.2% (NCHEMS, 2015). National 6-year graduation rates for full-time undergraduates seeking bachelor degrees at 4-year universities in 2013 was 59% and Tennessee 57% (NCES, 2015b).

Financial ramifications of inefficiencies in higher education contributed to funding changes in Tennessee and nationally. A study conducted by The American Institutes of Research illustrates the economic crisis involved in higher education as it discloses that $6.2 billion in financial aid was paid to colleges and universities between the years of 2003 and 2008 for the education of students who stopped attending after 1 year (O'Keeffe, 2013). Currently in Tennessee 1.76 credentials or degrees are awarded per $100,000 of state expenditures (NCES, 2015b).

The emphasis of student success has been reflected in the initiatives employed by states in conjunction with performance funding such as California's creation of a student success

scorecard for its 112 community college campuses; the scorecard provides a longitudinal analysis for each college using historical data (California Community Colleges, 2015). Mbuva (2011) cites five specific ways to improve retention: help students graduate on time, ensure that school is a positive experience for students, focus on early intervention, help students set academic and career goals, and use activities to motivate and engage students. Helping students to graduate on time involves advising, academic planning, and staying on track, and these are core elements of the student engagement software packages. Communications are key factors in making students feel vested and involved in their education to enhance the positive aspects of the college experience. Whenever students struggle, those receiving support very quickly, whether it is academic or social in nature, are more likely to progress and return the next semester (Mbuva, 2011). Providing student support and deciding the levels of student support are tactical choices of institutions.

The strategic and budgetary shifts needed on college campuses in order to "reimage the student experience for improved retention will require schools to stop doing some things that are lower priority, off-mission, or ineffective and reallocate resources to do the things necessary to improve student success" (McClenney & Dare, 2013, p.42). These initiatives require expenditure of funds beyond the current budgets of community colleges (McClenney & Dare, 2013). The need to refocus and alter allocations to meet these goals is particularly imperative for community colleges that have a higher percentage of at-risk students who typically require more services to complete a pathway (Boerner, 2014).

Noninstitutional Factors of Student Success and Retention

Any discussion of student success and student success indicators must involve individual student demographics outside of the influence of the institution. In determination of the institutional performance outcomes the drafting legislators of performance funding made no allowances for the inherent capabilities students bring on to campus as freshmen (CCTA, 2010). This is incongruent with findings of Tinto (1975) that individual characteristics of students entering college are principal influences in retention. Accordingly, the combination of the capabilities, preparation of incoming students, and the expectations and requirements of college are the most influential factors in retention (Boden, 2012). These factors are not controlled by the institution and cannot be accounted or adjusted for in any formula funding system (Boden, 2012).

In the literature four common themes emerge in the discussion of student characteristics and success in college: noncognitive variables, cognitive variables, family background, and cocurricular activities. Noncognitive commonalities of successful college students are setting clear goals, strong motivation, ability to manage external demands, and self-empowerment (Martin, Galentino, & Townsend, 2014). These character traits are outside the influence of the institution and allow students to succeed in spite of unpreparedness for college work. The most predictive factor in college success is having a well-defined college plan (Martin et al., 2014). The second theme is cognitive variables such as high school grade point average, scores on standardized tests, rigor of the student secondary school experience, and secondary school course completion (Kelly, Kendrick, Newgent, & Lucas, 2007). Family background includes but is not limited to demographic factors such as parental expectations, parental educational attainment,

socioeconomic status, race, genetics, and gender. Environmental effects were found not to be exclusive in student success in a study of 6,653 pairs of twins in England in that genetics accounted for 62% of the variance for standardized test scores among 16 year olds (Shakeshaft et al., 2013). A study of over 5,000 teenagers concluding educational attainment could be quantified by genetic contribution supports the work of Shakeshaft et al. (Ward et al., 2014). Lastly, the fourth theme is cocurricular activities on campus and off campus. One of the greatest challenges for community college students that often results in withdrawal is the demands on their time including employment and family commitments (Karp, 2011). The majority of community colleges students in a study conducted by Martin et al. (2014) were employed at least part-time while enrolled and some held multiple jobs. On campus extracurricular involvement is a nonfactor in the success of highly inspired community college students with well-defined goals. Successful students in this group rarely participate in activities outside of class including study groups, meetings with faculty, or other nonacademic campus activities (Martin et al., 2014). However, highly inspired students with well-defined goals attended class regularly with many having perfect attendance. The lack of need for engagement outside of the classroom for success for highly motivated students is in contrast to the theory of social integration of Tinto (1975) as well as Mbuva (2011).

Budget Function Allocations and Performance Outcomes

Resource allocations for institutions of higher education are reported in standard formats identifying the major budget function areas and corresponding appropriations. While it can be

argued that all college expenses impact students, those considered to have the most direct impact on student success are Student Services, Academic Support, and Instruction (NCES, 2015b).

Student Services

These themes related to characteristics that impact student success drive much of the work in Student Services. The majority of Student Services allocations designed to enhance performance outcomes involve increasing student social contact among peers as well as with college faculty and staff (Bean, 1985). Student engagement and social interaction improve attrition rates (Bean, 1985); students who develop relationships with faculty and peers and adjust socially to campus life are more likely to be retained (Kelly et al., 2007). Student Services programs emphasizing personal student contact promote a sense of community and belonging and therefore enhance retention (Maher & Macallister, 2013). According to the Center for Community College Student Engagement Survey (2009) most attrition at community college is attributed to lack of student connection to the campus and lack of engagement with academic work. A relationship with a single key person at an institution significantly affects student decisions to remain or withdraw from college (Chickering & Gamson, 1989). Participation in orientation is confirmed to improve retention for at risk students, but only 38% of institutions required orientations due in part to the additional expenditures in Student Services labor and operations (CCCSE, 2009). Ninety percent of university students at St. Petersburg College in Florida who attend face-to-face orientations reported feeling better prepared for the first years of college (Law, 2014). In a case study of Student Services best practices at an Australian university, "just-for-me" principles were researched. These initiatives were designed to instill a sense of value and belonging for students with peers, faculty, staff, and the institution (Maher &

Macallister, 2013). Standards included action items such as individual admissions interviews, comprehensive mentoring of new students and congruence of academics and student support services (Maher & Macallister, 2013). The success is attributed to a campuswide commitment and investment in ensuring students feel acclimated to campus life and academics through Student Services engagement activities (Maher & Macallister, 2013).

First year students are especially vulnerable to attrition and struggle with newfound freedom and separation anxiety as a result of being away from family and friends (Gerdes & Mallinckrodt, 1994). Intrusive counseling as part of a structured first year program is beneficial to first year students (Kelly et al., 2007). Initial contact with students in the intrusive counseling program was by counseling services as opposed to students soliciting help. The need for counseling services represents a void in 2-year institution professional staff salary budgets as community colleges often lack professional counseling services (Gallagher, 2013). Universities are more likely to have on-site professional psychiatric staff in comparison to community colleges. Only 8% of community colleges and 58% of universities have full time professionals to counsel students (Gallagher, 2013). However, Tennessee community colleges with high ratios of allocations in Student Services in comparison to other functional areas had lower performance scores in a study of the initial version of performance funding in Tennessee (Thompson & Riggs, 2000). Colleges that spent an average of 1.02% more in Student Services placed in the lowest aggregated performance mean group for all performance indicators (Thompson & Riggs, 2000). In a qualitative study limited to a single community college and a university in Tennessee, Doochin (2013) surmised that institutions in Tennessee have added Student Services positions in recruitment, admissions, and financial aid and reorganized some

higher level administrative responsibilities to include Academic Support in response to performance outcome funding.

Academic Support

The second budget area for colleges and universities that impacts student retention and success is Academic Support. Initiatives for improvement of performance outcomes through Academic Support often result in allocations for technological aids (Simons, 2011). Student success monitoring systems (SSMS) such as *Starfish*, *Oncourse*, and *Gradesplus* a have been purchased by many schools as advising, student tracking, retention, and communication tools (Chano, Spicer, & Valbuena, 2012). SSMS systems have the capacity to alert students, instructors, and advisors of poor academic performance and poor attendance. *Starfish* also contains an option to notify the same parties of good performance. Managing early alert systems is labor intensive and functions best with professional Academic Support personnel dedicated to the operations and analytics of the program (Simons, 2011). Atwater (2014) declares retention gains would be the result of better communication between students, faculty, and advisors by using methods most accepted by students: social media, instant alerts, and text messaging. Other communication technologies employed by institutions of higher education as retention tools include video conferencing systems and online orientations (Atwater, 2014).

Increased salary allocations to enhance performance outcomes through Academic Support are often related to advising or extracurricular academic activities such as service learning or tutoring (Gallard, Albritton, & Morgan, 2010). Seminole State College in Sanford, Florida created an Academic Success Center to improve the rates of retention and transition into college level classes or developmental education students in math, reading, and English (Gallard

et al., 2010). Appropriations for experienced tutors resulted in increases in developmental education course completion rates of 15.5% (Gallard et al., 2010).

Yob (2014) identifies the benefits of student connectedness as an enhancement tool for retention through academic processes such as service learning. Service learning as a function of Academic Support has a positive impact on student retention especially for first generation and female students through interpersonal interaction, engagement, participation, and personal meaningfulness (Yob, 2014). In 2000 LaGuardia Community College began The LaGuardia Community Student Technology Mentor as an initiative to assist faculty with the integration of technology into classrooms (Corso & Devine, 2013). Students were compensated as student workers under the Academic Support budget. The program expanded to include more peer interaction and resulted in participating students having higher retention and graduation rates in comparison to peers of equal academic standing due to enhanced sense of value, greater self-confidence, deeper relationships with faculty, and greater connection to the institution (Corso & Devine, 2013).

Florida St. Petersburg College began The College Experience: Student Success Program with a goal of providing the support needed for students to earn a degree or certificate (Law, 2014). Areas of focus for the program are percentages of grades of D and F, low success rates for gateway courses, and unacceptable performance by minorities especially male African Americans. The strategies employed were as follows: expand out-of-class support, integrate career and academic advising, improve new student orientation, set up an early alert system and student coaching, and enhance *My Learning Plan Tool*. Expansion of out-of-class support was accomplished by adding professional and peer tutors while increasing the accessibility and

enhancing the persona of the learning support centers that resulted in an increase in the number of students participating in tutoring and higher success rates (a grade of C or better) for those who did attend (Law, 2014). In order to determine career goals, incoming freshmen were interviewed and those undecided were offered intensive career exploration. Students who select a career goal are more successful and are more likely to complete an academic path (Law, 2014). Advisors were assigned to contact students in the first few weeks of the semester. Ninety percent of students who attend the face-to-face orientations feel better prepared for the first years of college (Law, 2014). Students who work with advisors after receiving an early alert are more likely to stay enrolled (Law, 2014). Enhancement of *My Learning Plan Tool* allows students to create a map of all courses needed to complete a pathway. Students who complete a plan on *My Learning Plan* software have a significantly higher completion rate than those who do not complete a plan (Law, 2014). The fall 2013 cohort of students had a 5% higher success rate (grade of C or higher) in classes than the 2012 cohort (Law, 2014). Minority success rates increased by 8% from fall 2012 to fall 2013 and African American males were 14% more successful in the same time period (Law, 2014). *My Learning Plan* software was demonstrated as an effective advising tool (Law, 2014).

Centralized advising is an effective Academic Support tool for retention and completion (Chiteng Kot, 2014). Students using centralized advising compared to students receiving no advising have higher grade point averages for the first and second semester (Chiteng Kot, 2014). Students receiving advising in a centralized format are more likely to be retained (Chiteng Kot, 2014).

Instruction

The budget functional area of Instruction is the highest percentage of expenditures representing an average of 59% of community college overall budgets and 44% of universities budgets in the United States (NCES, 2015b). Appendix A contains NCES data with college allocations by percentage budget distribution from 2005 through 2012. Three primary areas of Instructional budgets relate most closely with student retention and graduation; faculty salaries, remedial education, and student success courses. Within the budget category of Instruction specifically, faculty salaries comprise most of this amount and, across all institutions, faculty salaries are positively correlated with performance outcomes (Webster & Showers, 2011). This is supported by the findings of a study involving the initial version of performance funding for Tennessee community colleges in that institutions with higher allocations for Instruction, Academic Support, Student Services, and operation and maintenance as a percentage of total budget achieved higher scores on individual performance standards in comparison to colleges allocating more funds to institutional support, public service, and scholarships (Thompson & Riggs, 2000). When comparing total performance funding points with aggregated education and general fund higher scoring, institutions devoting higher percentages of budgets for Instruction and Academic Support outperformed peer institutions with higher allocations for institutional support and Student Services (Thompson & Riggs, 2000). In all cases those higher scoring institutions, through their budgetary emphases, have more effectively strategically interrelated operations to college mission (Thompson & Riggs, 2000). Total Instruction budgets can be reflective of student-faculty ratios that impact student success (Webster & Showers, 2011).

The use of part-time or adjunct instructors is a popular method of reducing the allocations to Instruction budgets (Ayala, 2009). The overall number of part time faculty teaching grew from 40% in 1993 to 49% in 2013 and currently, community colleges employ part-time instructors to teach 58% of courses (NCES, 2015a). This shift has mixed results on performance outcomes as a significant decrease in freshman year retention is correlated with adjunct faculty instruction during the first 2 years of college (Ayala, 2009). Students taught by fulltime faculty members are found to be at an academic advantage on performance measures (Kirk & Spector, 2009; Mueller, Mandernach, & Sanderson, 2013).

An inherent mission of each institution of higher education is provision of quality instruction. Therefore, opportunities for improvements in performance outcomes through instruction are focused in nontraditional edification such as remedial education, college experience courses, and accelerated course work (Fike & Fike, 2008; Klinkkenberg, 2013; Waycaster, 2001; Zavarella, 2008). Fall 2013 data indicate 58.8% of first-time, Tennessee community college freshmen require at least one remedial course (THEC, 2014a). Remedial courses were eliminated from university course offerings by the Complete College Tennessee Act of 2010 (CCCTA, 2010). Remedial courses are major barriers to student progression as students either spend high percentages of time in those courses early in academic careers or become frustrated and drop out of college completely (CCCSE, 2009). The number of remedial courses taken by students significantly influences the successful completion of graduation (Henry, 2014). Likewise, the strongest predictors for retention of community college students are passing a developmental reading course and the ability to read at a college level (Fike & Fike, 2008). Remedial mathematic skills are identified as the most essential to degree attainment (Hall & Ponton, 2005). The positive influence on degree attainment is because, "extra attention that

developmental students receive in counseling, advising, teaching and monitoring progress, as well as smaller classes, contribute to this higher level of retention for developmental mathematics students"(Waycaster, 2001, p. 412). Accelerated remedial programs are available, but only 13% of schools require accelerated remedial courses (CCCSE, 2009). Taking this into consideration, many schools have purchased competency based systems of remediation using web-based software as the primary delivery mode (Zavarella, 2008). Providing a self-paced system is attractive to schools seeking to decrease time students spend in remedial classes and allocations for noncollege level courses. Accelerated college credit courses are often offered with midterm starts to provide opportunities for students to complete a credit course along with fulfillment of remedial requirements in a concurrent semester (Columbia State Community College, 2015). Competency-based instruction is suggested as a potential, valuable asset for institutions in the reporting of performance measures as it is purported to remove the ambiguity of calculations of the traditional system and augment the ease of tabulation in an outcomes-based funding scheme (Zavarella, 2008). Proficiency-based course work is touted as means of expediting developmental course completion, however web-assisted, remedial courses that are competency based do not increase student success in math (Ha, 2014). In addition to resulting proficiency differences, students are also more prone to withdraw from computer-based formats compared to traditional lecture courses (Zavarella, 2008).

College experience or college success courses are not a requirement for incoming freshmen at all institutions and not a general Instruction expense. Students who successfully complete a student success course have a higher level of academic progress and are more likely to persist than students who do not participate in the student success course (Klinkkenberg, 2013). CCCSE (2009) work validates this in a study of first-year college experience courses that

create personal connections and aid students in setting high academic expectations including the development of academic plans. However, 75% of students surveyed in the study were not enrolled in such a class and of those who were enrolled in a first year experience course, 74% believed it was beneficial and should be mandatory (CCCSE, 2009).

In summary, the three budget functions of higher education institutions most related to student retention and graduation in the literature are Student Services, Academic Support and Instruction. In addition to the research related to the specific operations and programs within these budget areas, scholars have examined the efficacy of performance outcome funding.

Efficacy of Performance Outcome Funding

Many states adopted performance formula funding in lieu of enrollment based allocations in recent years, but research indicates the programs do not work as intended (Tandberg et al., 2014). Rutherford and Rabovsky (2014) find the current performance funding polices are not positively correlated to improved student success; indeed, the policies may contribute to declines in performance outcomes of institutions. Researchers at Florida State University and the University of Wisconsin at Madison examined performance funding in 19 states where the overall goals were to increase the numbers of degree completers at the associate level. Only four states experienced improved student success and graduation rates while nine states saw no significant changes and six had decreases in graduation rates (Tandberg et al., 2014). Similar results are reported for bachelor degree programs with a positive change in four states, no change in 12 states, and a negative impact in four (Tandberg et al., 2014). In Florida the number of

associate degrees and technical certificates awarded are unaffected by funding method (Phillips, 2002). The performance funding model of Pennsylvania does not systematically augment awards of associate and bachelor degrees and the funding model is ineffective in terms of student completion (Hillman, Tandberg, & Gross, 2014). In a comparison of five performance funding states and five states not employing the model, funding method is not a statistically significant predictor of graduation rate or retention rate over an 8-year period (Polatajko, 2012). Modifications to these funding models have been not been successful as demonstrated by the research of Sanford and Hunter (2011) involving the Tennessee model in place prior to 2010. Changes to the financial incentive of programs had no effect on student performance indicators (Sanford & Hunter, 2011).

Shin (2010) states no significant increases of institutional performance outcomes for graduation rates are documented as a result of performance funding in a study of 166 universities over a 10-year period. Furthermore, nonperformance funded research institutions have superior scores on performance indicators of graduation rate, top 10% entrants, peer assessment score, instructional costs per student, and federal research funding than those participating in an outcomes based allocation system receiving greater amounts of appropriations. This research also finds student to faculty ratio to be significantly negatively correlated with state appropriations based on performance outcomes (Bradford, 2008).

In poor economic conditions the number of academic degrees granted and/or scientific publications produced by an institution are not affected by performance outcome funding and performance outcome funding has no major impact at the departmental level. However, in more robust economies allocations become more variable resulting in demoralization of faculty and

staff (Alho & Mikko, 2000). Therefore, the programs become a disincentive rather than an incentive for enhancement of institutional effectiveness.

Causations of the ineffectiveness of performance funding have been identified as ill-defined, narrow goals and policies with little regard for safeguards or unforeseen concerns (Tandberg et al., 2014). Sörlin (2007) demonstrates that adhering to individual college missions and foci are problematic areas in performance funding across large systems with diverse types of institutions. This is in concert with the work of Shin (2010) that identifies institutional flexibility as a factor of ineffectiveness. Boden (2012) explains retention and graduation rates as measures of institutional stability as opposed to institutional performance and goes on to state that student success factors are not solely influenced by the institution. Principal-agent theory, resource dependence theory, and neo-institutionalism are cited by Nisar (2015) as foundational constructs for the limited impact of performance funding as an element of student success. These economic theories apply to the relationship between institution and state-wide systems and offer insight to the dynamics of policy application without consideration of individual institutional mission or student population (Nisar, 2015).

A nonexperimental study by Griffin (2013) illustrates the potential negative impact performance funding can have on an institution. Had the performance funding model been implemented in 2005, Tennessee State University (TSU) would have lost approximately 12% of state funding, or $1.65 million. The study involves the 2005 freshman cohort and uses completion, retention, and graduation data related to that group as factors for performance in the formula. Fall-to-fall retention rate for this group would have been below established goals of TSU for Complete College Tennessee Act of 2010 and subsequently an obstruction to attainment of satisfactory measures in completion and graduation (Griffin, 2013).

The lack of state appropriations to fully fund the formula systems is a problem in the implementation process as states cannot or will not allocate enough money to satisfy the scheme. According to the National Council of State Directors of Community Colleges in a 2008 survey, less than half (35%) of the states using formulas are fully funding community colleges (Katsinas & Tollefson, 2009). Currently, Tennessee is allocating 60% of the appropriations dictated by the performance funding formula (THEC, 2015b).

While much of the research does not support performance funding, proponents argue that many states are in the earliest stages of implementation and longitudinal studies will be required to better understand impacts as the programs mature and permeate throughout the campuses. Some institutions realize benefits to performance outcome funding such as Pensacola Junior College that uses performance indicators to improve institutional effectiveness through review of performance outcome measures providing the opportunity to clarify, focus, publicize, and enhance overall mission and individual academic programs (Zarkesh & Beas, 2004). Bradford (2008) demonstrates that outcomes based funding formulas have factors that are trustworthy, functional administrative tools for strategic planning. The work of Griffin (2013) at TSU demonstrates the benefit of performance outcome funding as a measurement tool for institutional effectiveness and standardization. Without formula funding, low retention rates (17%) such as those at TSU may be ignored in an enrollment based funding system (Griffin, 2013). California turned the concept into a marketing tool for schools by development of a "student success scorecard" that lists each community colleges latest performance in the areas of completion and persistence (California Community Colleges, 2015).

In summary, performance funding has not been effective in many regards. However, these funding models are still in the development process and will need several years of data to provide reliable analysis. The current model used in Tennessee went into effect in 2010 and limited research is available on efficacy.

Tennessee Community Colleges and Universities

The sample for this study was the state supported community colleges and universities of Tennessee. Tennessee has two separate systems of higher education, the Tennessee Board of Regents and the University of Tennessee. These systems operate independently and receive funding through the Tennessee Higher Education Commission.

The Tennessee Board of Regents

In 1972 the Tennessee General Assembly created the TBR system as the governing body for all publicly supported higher education institutions excluding the University of Tennessee system. Six universities, 13 community colleges, and 28 colleges of applied technology (formerly Tennessee Technology Centers) are under TBR control (TBR, 2015a). The following is a list of TBR universities: Austin Peay State University, East Tennessee State University, Middle Tennessee State University, Tennessee State University, Tennessee Technological University, and the University of Memphis. The following is a list of TBR community colleges: Chattanooga State Community College, Cleveland State Community College, Columbia State Community College, Dyersburg State Community College, Jackson State Community College, Motlow State Community College, Nashville State Community College, Northeast State

Community College, Pellissippi State Community College, Roane State Community College, Southwest State Community College, Volunteer State Community College, and Walters State Community College.

Community Colleges

Community colleges in the TBR system offer workforce training, technical certificates, associates of applied science degrees, associates of arts degrees, and associates of science degrees (What we do, 2015). Community college student demographics are very diverse both academically and socially as these institutions provide education to high school students through dual enrollment, recent high school graduates, and returning adults (NCHEMS, 2015). Coursework can range from skill training such as welding to university transfer credits in courses such as organic chemistry and calculus (What we do, 2015). A stipulation in the CCTA is the movement toward unification of the community colleges through course and program synchronization in order to offer the citizens of Tennessee similar educational opportunities throughout the state (CCTA, 2010).

University of Tennessee System

The University of Tennessee system officially began in 1869 with a designation as a land grant university through the Morrill Act. Three universities with undergraduate programs, University of Tennessee at Knoxville, University of Tennessee at Chattanooga, and University of Tennessee at Martin, operate in the system. The Board of Trustees is the governing body of The University of Tennessee. The Board is comprised of five ex officio members (the Governor, Commissioner of Agriculture, Commissioner of Education, Executive Director of the Tennessee

Higher Education Commission, and President of the University) and 21 members appointed by the Governor (University of Tennessee, 2015).

Summary

More states are adopting performance funding as legislatures seek efficient modes of operations for higher education through incentive orientated models (Talbert, 2012; THEC, 2014b). Tennessee developed one of the most extensive formulas for calculating performance outcome funding in the United States as a result of the Compete College Tennessee Act of 2010. Tennessee's public community colleges and universities are expected to make improvement in performance outcome measures with limited state appropriations (THEC, 2014b). Performance outcome measures are student success and student retention in nature (THEC, 2014a). Improvements in retention and completion rates are best addressed with programs and initiates dealing with student engagement and social involvement (Bean, 1985; CCCSE, 2009; Chickering & Gamson, 1989; Corso & Devine, 2013; Kelly et al., 2007; Law, 2014; Maher & Macallister, 2013; Yob, 2014). Often support systems are lacking at the community college level (McClenney & Dare, 2013). However, several studies indicate that college student success is more directly influenced by factors outside of the control of the institution such as socieconomic status (Tinto, 1975), parental educational attainment (Kelly et al., 2007), motivation (Martin et al., 2014), and genetic predisposition (Shakeshaft et al., 2013; Ward et al., 2014). In pursuit of higher retention rates and other performance outcomes, schools invest in software packages as aids in student tracking and communications (Atwater, 2014; Tampke, 2013) and add personnel (Doochin, 2013). Cultural shifts are needed on college campuses to

reimagine the student experience; improvements in completion rates will require schools to abandon some programs that are off-mission or ineffective and reallocate resources to initiatives necessary to improve student success (McClenney & Dare, 2013). As higher education systems adopt these funding methods and pursue strategies that lead to meeting performance indicators, the overall efficacy of performance funding models for higher education is still in debate as some research indicates the programs do not work as intended (Bradford, 2008; Shin, 2010). Therefore, the purpose of this nonexperimental quantitative study is to investigate significant relationships between budget functions and performance outcomes for all community colleges and public universities in Tennessee.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter includes the research design and the methodology for the study including the Research Questions and null hypotheses, instrumentation, population, data collection, and data analysis. This researcher employed a nonexperimental quantitative research methodology that included correlation and comparative designs to analyze secondary data. Correlational research is the assessment of relationships between two or more phenomenon, whereas comparative design is the investigation into differences between two or more groups being studied (McMillan & Schumacher, 2006).

The purpose of this nonexperimental quantitative study is to investigate the relationships between budget functions and performance outcomes for the 13 Tennessee Board of Regents community colleges, six Tennessee Board of Regents Universities and three universities in the University of Tennessee system. Analyses involved examining various budget functions and the allocations for each of the 13 public community colleges and nine public universities from 2006 through 2013. Budget function allocation data were collected per FTE in the October budget of each academic year. October budgets reflect institutional direction and financial strategies for the current academic year as opposed to final budgets that indicate actual spending as influenced by situational needs. The differences in the allocations for the two are typically inconsequential. Predictor variables included allocations per FTE for the following budget function items:

- Operational expenses for Student Services
- Salary expenses for Student Services
- Operational expenses for Academic Support

- Salary expenses for Academic Support
- Operational expenses for Instruction
- Salary expenses for Instruction

Statistical tests were conducted to determine whether statistically significant relationships between these predictor variables and the following performance outcomes (recorded as ratios to FTE per institution):

Community Colleges

- Completion of 12 credit hours
- Completion of 24 credit hours
- Completion of 36 credit hours
- Number of technical certificates awarded
- Number of associate degrees awarded

Universities

- Completion of 24 credit hours
- Completion of 48 credit hours
- Completion of 72 credit hours
- Number of bachelor degrees awarded

Research Questions and Null Hypotheses

The study addressed several Research Questions to determine the relationship(s) between budget functions and performance outcomes of community colleges and universities.

Research Question 1: Is there a significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_01_1: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_01_2: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_01_3: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_01_4: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_01_5: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 2: Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_02_1: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_02_2: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_02_3: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_02_4: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_02_5: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 3: Is there a significant relationship between operational budget allocations for Academic Support per FTE at 13 Tennessee's public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_03_1: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_03_2: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 3_3$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 3_4$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 3_5$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 4: Is there a significant relationship between salary budget allocations for Academic Support a per FTE at Tennessee's 13 public community colleges and student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 4_1$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

$H_0 4_2$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 4_3$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 4_4$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 4_5$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 5: Is there a significant relationship between operational budget allocations for Instruction per FTE at 13 Tennessee's public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 5_1$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

$H_0 5_2$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 5_3$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 5_4$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 5_5$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 6: Is there a significant relationship between salary budget allocations for Instruction per FTE at 13 Tennessee's public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 6_1$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

$H_0 6_2$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 6_3$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 6_4$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 6_5$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 7: Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_07_1: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_07_2: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_07_3: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 7_4$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 7_5$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

Research Question 8: Is there a significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 8_1$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 8_2$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 8_3$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 8_4$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 9: Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 9_1$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 9_2$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 9_3$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 9_4$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 10: Is there a significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 10_1$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 10_2$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 10_3$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 10_4$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 11: Is there a significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 11_1$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 11_2$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 11_3$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 11_4$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 12: Is there a significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 12_1$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 12_2$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 12_3$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 12_4$: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 13: Is there a significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 13_1$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 13_2$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 13_3$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 13_4$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 14: Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 14_1$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 14_2$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 14_3$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 14_4$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic

Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

Research Question 15: To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's 13 public community colleges predict student success as measured by the five performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 15_1$: There is no relationship between the budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's 13 public community colleges and student success as measured by the five performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

Research Question 16: To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's nine public universities predict student success as measured by the four university performance outcomes (number of students completing 24 credit hours,

completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 16_1$: There is no relationship between budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's nine public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

Population

Data for this study were collected from each of the Tennessee public community colleges and universities. Two systems of higher education operate in Tennessee: the Tennessee Board of Regents and the University of Tennessee. University of Tennessee institutions included in the study were the University of Tennessee at Knoxville, the University of Tennessee at Chattanooga, and the University of Tennessee at Martin. The following TBR universities were involved in this study: Austin Peay State University, East Tennessee State University, Middle Tennessee State University, Tennessee State University, Tennessee Technological University, and the University of Memphis. The following TBR community colleges were involved in this study: Chattanooga State Community College, Cleveland State Community College, Columbia State Community College, Dyersburg State Community College, Jackson State Community College, Motlow State Community College, Nashville State Community College, Northeast State Community College, Pellissippi State Community College, Roane State Community

College, Southwest State Community College, Volunteer State Community College, and Walters State Community College.

Instrumentation

The data for this study were collected through institutional websites, the THEC website, and solicitations of information from the budget offices of TBR and UT. Performance outcome data were obtained from the THEC website. October budget information was solicited from the office of Business and Finance at the Tennessee Board of Regents and the office of the Budget Director of the University of Tennessee. Complete October budgets from each institution from 2006 through 2013 were used for the study along with THEC performance outcomes from the same time periods. Appendix B contains a sample October revised budget.

Data Collection

This research was exempt from review by the ETSU Institutional Review Board (IRB) because it did not meet the definition of research involving human subjects. The IRB exemption letter is provided in Appendix I. This quantitative study was an analysis of secondary data collected from the community college budget reports, university websites, and the Tennessee Higher Education Commission Fact Books. All institutional data were compiled and reported as an aggregate therefore preserving anonymity.

Data Analysis

IBM SPSS Statistics Version 23 was used for data analysis. Descriptive statistics were reported on predictor and criterion variables to establish trends, whereas inferential statistics (bivariate, multivariate correlations, and multiple regression analyses) were used to compare groups of budget functions allocations and predict institutional performance outcomes. The budget function variables in the study were allocations from the academic years of 2006-07 through 2013-14 per FTE for the following budget functions: Student Services operations, Student Services salary, Academic Support operations, Academic Support salary, Instruction operations, and Instructional salary. The performance variables for community colleges were the number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded from the academic years of 2006-07 through 2013-14 per. The performance variables for universities were number of students completing 24 credit hours, completion of 48 credit hours, completion of 72 credit hours, and number of bachelor degrees awarded from the academic years of 2006-07 through 2013-14. Predictor and criterion variables were analyzed according to chronological sequence to compare budget function by academic year/years with corresponding performance outcomes. The variable pairings for analysis for community colleges are presented in Table 1.

Table 1

Pairings of Predictor and Criterion Community College Variables for Analysis

Predictor Variable	Criterion Variable
Oct. budget of concurrent academic year	Completion of 12 credit hours and 24 hours credit and technical certificates awarded.
Oct. budget of previous academic year	Completion of 36 credit hours and number of associates degrees awarded

The variable pairings for analysis for universities are presented in Table 2

Table 2

Pairings of Predictor and Criterion University Variables for Analysis

Predictor Variable	Criterion Variable
Oct. budget of concurrent academic year	Completion of 24 hours credit
Oct. budget of previous academic year	Completion of 48 hours
Oct. budget of 2 years previous	Completion of 72 hours
Oct. budget of 3 years previous	Number of bachelor degrees awarded

Research Question 1 was analyzed using bivariate correlation. The predictor variables were operational budget allocations per FTE for Student Services for community colleges. The criterion variables were performance outcomes for community colleges of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 2 was analyzed using bivariate correlation. The predictor variables were salary budget allocations per FTE for Student Services for community colleges. The

criterion variables were performance outcomes for community colleges of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 3 was analyzed using bivariate correlation. The predictor variables were operational budget allocations per FTE for Academic Support for community colleges. The criterion variables were performance outcomes for community colleges of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 4 was analyzed using bivariate correlation. The predictor variables were salary budget allocations per FTE for Academic Support for community colleges. The criterion variables were performance outcomes for community colleges of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 5 was analyzed using bivariate correlation. The predictor variables were operational budget allocations per FTE allocations per FTE for Instruction for community colleges. The criterion variables were performance outcomes for community colleges of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 6 was analyzed using bivariate correlation. The predictor variables were salary budget allocations per FTE for Instruction for community colleges. The criterion variables were performance outcomes for community colleges of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 7 was analyzed using bivariate correlation. The predictor variables were combined budget allocations per FTE for operations of Student Services, salary for Student Services, operations of Academic Support, salary for Academic Support, operations of Instruction, and salary for Instruction for community colleges. The criterion variables were performance outcomes for community colleges of completion of number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded.

Research Question 8 was analyzed using bivariate correlation. The predictor variables were operational budget allocations per FTE for Student Services for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 9 was analyzed using bivariate correlation. The predictor variables were salary budget allocations per FTE for Student Services for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 10 was analyzed using bivariate correlation. The predictor variables were operational budget allocations per FTE for Academic Support for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 11 was analyzed using bivariate correlation. The predictor variables were salary budget allocations per FTE for Academic Support for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 12 was analyzed using bivariate correlation. The predictor variables were operational budget allocations per FTE for Instruction for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 13 was analyzed using bivariate correlation. The predictor variables were salary budget allocations per FTE for Instruction for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 14 was analyzed using bivariate correlation. The predictor variables were budget allocations per FTE for operations of Student Services, salary for Student Services, operations of Academic Support, salary for Academic Support, operations of Instruction, and salary for Instruction for universities. The criterion variables were performance outcomes for universities including number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded.

Research Question 15 was analyzed using multiple regression. The predictor variables were budget allocations per FTE for operations of Student Services, salary for Student Services,

operations of Academic Support, salary for Academic Support, operations of Instruction, and salary for Instruction for community colleges. The criterion variable for $H_0 15_1$ was the community college performance outcomes of number of students completing 12 credit hours. The criterion variable for $H_0 15_2$ was the community college performance outcomes of number of students completing 24 credit hours. The criterion variable for $H_0 15_3$ was the community college performance outcomes of number of students completing 36 credit hours. The criterion variable for $H_0 15_4$ was the community college performance outcomes of number of technical certificates awarded. The criterion variable for $H_0 15_5$ was the community college performance outcomes of number of associate degrees awarded.

Research Question 16 was analyzed using multiple regression. The predictor variables were budget allocations per FTE for operations of Student Services, salary for Student Services, operations of Academic Support, salary for Academic Support, operations of Instruction, and salary for Instruction for universities. The criterion variable for $H_0 16_1$ was the university performance outcomes of number of students completing 24 credit hours. The criterion variable for $H_0 16_2$ was the university performance outcomes of number of students completing 48 credit hours. The criterion variable for $H_0 16_3$ was the university performance outcomes of number of students completing 72 credit hours. The criterion variable for $H_0 16_4$ was the university performance outcomes of number of bachelor degrees awarded.

Summary

Chapter 3 reported the methodology and procedures for conducting this study. After a brief introduction, a description of the research design, Research Questions and null hypotheses, instrumentation, population, data collection, and data analysis procedures was presented. The study explored whether a statistically significant relationship existed between institutional budget function allocations and performance outcomes for Tennessee's public community colleges and universities. A series of bivariate correlations were used to analyze the hypotheses for Research Questions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, and 13. Correlations were used to analyze the hypotheses for Research Questions 7 and 14. Multiple regression was used to analyze Research Questions 15 and16. The results of the data analyses are detailed in the Chapter 4.

CHAPTER 4

RESULTS

The purpose of this nonexperimental quantitative study was to investigate relationships between budget functions and performance outcomes for the 13 Tennessee Board of Regents community colleges, the six Tennessee Board of Regents Universities, and the three universities in the University of Tennessee System. Data analyses involved examining budget function allocations for the three areas most commonly associated in the literature to gains in performance outcomes: Instruction, Academic Support, and Student Services. For each of the three areas (Instruction, Academic Support and Student Services) budget data were further disaggregated to examine the budget lines of operations and salary for each area. The sampling frame used was October budgets from 2006 through 2013. Data were provided by the office of Business and Finance at the Tennessee Board of Regents, the office of the Budget Director of the University of Tennessee, and the Tennessee Higher Education Commission.

Budget and performance data from the 2006-07 academic year (AY) through AY 2013-14 were used in analysis. For AY 2006-07, three universities and three community colleges were included in the dataset due to availability of budget information. October budget information were unavailable in electronic format for remaining institutions for AY 2006-07 and corresponding performance data were omitted. The data set from AY 2007-08 lacked budget information for Tennessee State University and the corresponding performance outcomes were omitted. The AY 2013-14 performance data for universities did not delineate between associate and bachelor degrees awarded by Tennessee State University and Austin Peay State University. Therefore, those data were omitted.

The six predictor variables for all institutions were as follows: (1) Instruction salaries, (2) Instruction operational costs, (3) Academic Support salaries, (4) Academic Support operational costs, (5) Student Services salaries, and (6) Student Services operational costs. Academic salaries are specific to faculty and are a subunit of each salary budget area. All academic salaries were accounted for in the research as Instruction salaries. Salaries other than academic listed under Instruction were accounted for as Academic Support. The purpose of the data analyses was to determine if significant relationships existed between the six predictor and criterion variables of performance outcomes. For the community colleges the five criterion variables were the performance outcomes of completing of 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and the number of bachelor degrees awarded. For the universities, the four criterion variables were the performance outcomes of completing of 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and the number of bachelor degrees awarded. All data were coded per FTE for each institution for the year specific to the budget and the corresponding performance outcome. Performance outcome data were coded per 100 FTE for ease of analysis by SPSS.

Chapter 4 presents a summary of the data followed by statistical analyses of the Research Questions and associated hypotheses. An alpha level of .05 was used to determine the significance of the data. The findings of the study are addressed in this chapter.

Descriptive Statistics

Descriptive statistics of the predictor variables are presented in Tables 3, 4, 5, and 6. Data were grouped to illustrate means as well as trends across the time frame of the study. Annual means of the years of the first half of the study, 2006-2009, represent allocations and

performance outcomes of institutions prior to implementation of the Complete College Tennessee Act of 2010, and annual means of the years of the second half of the study, 2006-2009, represent allocations and performance outcomes of institutions subsequent to implementation of the Complete College Tennessee Act of 2010. While these data were not analyzed for statistical significance, it is of interest to note changes over the time period.

Tables 3 and 4 provide descriptive data of predictor variables for community colleges and universities. Increases in allocations for community colleges were greatest in operation of Academic Support (15.87%) and operations of Instruction (7.07%). University allocations for operations for Instruction increased 23.59%, with allocations for Academic Support and salaries for Student Services increasing 11.35% and 11.8%, respectively. All university budget function items increased while community colleges had lower expenditures for Instruction salaries and Student Services salaries. Spending for the combined budget functions increased 0.78% for community colleges indicating that total expenditures per student were somewhat stable. It must be noted that the data contained within Tables 3 and 4 have not been adjusted for inflation.

Table 3

Comparison of Tennessee Public Community College Budget Function Allocations Pre-CCTA and Post-CCTA

Budget Function	Mean allocation per FTE Pre-CCTA 2006-2009	Mean allocation per FTE Post-CCTA 2010-2013	% Change
Student Services: Operations	$337.79	$339.29	+0.44%
Student Services: Salaries	$480.77	$464.19	-3.45%
Academic Support: Operations	$297.44	$344.66	+15.87%
Academic Support: Salaries	$675.56	$688.72	+1.95%
Instruction: Operations	$780.12	$835.31	+7.07%
Instruction: Salaries	$2,237.73	$2,174.94	-2.81%
Total	$4,809.42	$4,847.11	+0.78%

Table 4

Comparison of Tennessee Public University Budget Function Allocations Pre-CCTA and Post-CCTA

Budget Function	Mean allocation per FTE Pre-CCTA2006-2009	Mean allocation per FTE Post-CCTA 2010-2013	% Change
Student Services: Operations	$856.09	$909.27	+6.21%
Student Services Salaries	$757.70	$847.07	+11.80%
Academic Support: Operations	$405.82	$451.90	+11.35%
Academic Support: Salaries	$1,016.30	$1,033.01	+1.64%
Instruction: Operations	$1,084.97	$1,340.91	+23.59%
Instruction: Salaries	$3,662.75	$3,827.69	+4.50%
Total	$7,783.63	$ 8,409.86	+8.05%

Tables 5 and 6 provide descriptive data of performance outcome means. Community colleges experienced marked declines in three of the five performance outcomes (completion hours), yet awards of technical certificates and associate degrees increased 45.54% and 23.7%, respectively. A substantial percentage gain in awards of technical certificates was due in part to the relatively low initial figures of the study; therefore, moderate raw number increases resulted in a large overall percentage gain for the timeframe. University trends in performance outcomes were similar; completion rates of first and second year students declined and number of bachelor degrees awarded increased.

Table 5

Comparison of Tennessee Public Community College Performance Outcome Measure Means Pre-CCTA and Post-CCTA

Performance Outcome	Mean performance outcome per 100 FTE Pre-CCTA 2006-2009	Mean performance outcome per 100 FTE Post-CCTA 2010-2013	% Change
Completion of 12 hrs.	69.27	41.79	-39.66%
Completion of 24 hrs.	45.24	32.11	-29.01%
Completion of 36 hrs.	33.44	26.67	-20.27%
Awards of Tech Cert.	2.95	4.29	+45.51%
Awards of Associate Degrees	13.17	16.30	+23.70%

Table 6

Comparison of Tennessee Public University Performance Outcome Measure Means Pre-CCTA and Post-CCTA

Performance Outcome	Mean performance outcome per 100 FTE Pre-CCTA 2006-2009	Mean performance outcome per 100 FTE Post-CCTA 2010-2013	% Change
Completion of 24 hrs.	19.71	15.92	-19.20%
Completion of 48 hrs.	16.55	15.28	-7.67%
Completion of 72 hrs.	16.57	16.52	-0.32%
Awards of Bachelor Degrees	16.47	18.53	+12.49%

Research Question 1

Research Question 1: Is there a significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_01_1: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_01_2: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_01_3: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_01_4: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_01_5: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships

between operational budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded).

The results of these analyses, presented in Table 7, show these correlations were not statistically significant. A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between community college operational budget allocations for Student Services and the performance outcomes of completion of 12 credit hours, 24 hours, and 36 hours and awards of associate degree and technical certificates. The correlation between Student Services operations budgets and completion of 12 credit hours was not significant, $r(95) = .01$ and $H_0 1_1$ was retained. The correlation between Student Services operations budgets and completion of 24 credit hours was not significant, $r(95) < .01$ and $H_0 1_2$ was retained. The correlation between Student Services operations budgets and completion of 36 credit hours was not significant, $r(82) = .03$ and $H_0 1_3$ was retained. The correlation between Student Services operations budgets and awards of technical certificates was not significant, $r(95) = .20$ and $H_0 1_4$ was retained. The correlation between Student Services operations budgets and awards of associate degrees was not significant, $r(82) = .08$ and $H_0 1_5$ was retained.

Table 7

Bivariate Correlations of Operations of Student Services Budget Allocations and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	.01	.934
Completion of 24 hrs.	95	< .01	.996
Completion of 36 hrs.	82	.03	.759
Awards of Tech. Cert.	95	.20	.056
Awards of Associate Degrees	82	.08	.495

Research Question 2

Research Question 2: Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_02_1: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_02_2: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_02_3: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_02_4: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_02_5: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded).

The results of these analyses, presented in Table 8, show four of these correlations were not statistically significant and one was statistically significant. The correlation between budget allocations for Student Services salaries and completion of 12 credit hours was not significant, $r(95) = .13$ and H_02_1 was retained. The correlation between Student Services salary budgets and completion of 24 credit hours was not significant, $r(95) = .14$ and H_02_2 was retained. The correlation between Student Services salary budgets and completion of 36 credit hours was not significant, $r(82) = .19$ and H_02_3 was retained. The correlation between Student Services salary budgets and awards of technical certificates was significant, $r(95) = .20$, $p = .049$ and H_02_4 was

rejected. The correlation between Student Services salary budgets and awards of associate degrees was not significant, $r(82) = .18$ and $H_0 2_5$ was retained.

Table 8

Bivariate Correlations of Salaries of Student Services Budget Allocations and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	.13	.228
Completion of 24 hrs.	95	.14	.165
Completion of 36 hrs.	82	.19	.083
Awards of Tech. Cert.	95	.20*	.049
Awards of Associate Degrees	82	.18	.101

Note. An asterisk (*) indicates statistical significance at the $p < .05$ *level*.

Research Question 3

Research Question 3: Is there a significant relationship between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 3_1$: There is no significant relationship between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

$H_0 3_2$: There is no significant relationship between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 3_3$: There is no significant relationship between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 3_4$: There is no significant relationship between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 3_5$: There is no significant relationship between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between budget allocations for operations of Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded).

The results of these analyses, presented in Table 9, show none of the correlations were statistically significant. The correlation between budgets for allocations for operations of Academic Support and completion of 12 credit hours was not significant, $r(95) = -.12$ and $H_0 3_1$ was retained. The correlation between budgets for operations of Academic Support and completion of 24 credit hours was not significant, $r(95) = -.10$ and $H_0 3_2$ was retained. The

correlation between budgets for operations of Academic Support and completion of 36 credit hours was not significant, $r(82) = -.11$ and $H_0 3_3$ was retained. The correlation between budgets for operations of Academic Support and awards of technical certificates was not significant, $r(95) = -.04$ and $H_0 3_4$ was retained. The correlation between budgets for operations of Academic Support and awards of associate degrees was not significant, $r(82) = -.11$ and $H_0 3_5$ was retained.

Table 9

Bivariate Correlations of Operations of Academic Support Budget Allocations and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	-.12	.238
Completion of 24 hrs.	95	-.10	.329
Completion of 36 hrs.	82	-.11	.310
Awards of Tech. Cert.	95	-.04	.732
Awards of Associate Degrees	82	-.11	.344

Research Question 4

Research Question 4: Is there a significant relationship between budget allocations for salaries for Academic Support per FTE at Tennessee's 13 public community colleges student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 4_1$: There is no significant relationship between budget allocations for Academic Support salaries per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

$H_0 4_2$: There is no significant relationship between budget allocations for Academic Support salaries per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 4_3$: There is no significant relationship between budget allocations for Academic Support salaries per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

$H_0 4_4$: There is no significant relationship between budget allocations for Academic Support salaries per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

$H_0 4_5$: There is no significant relationship between budget allocations for Academic Support salaries per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded).

The results of these analyses, presented in Table 10, show these correlations were not statistically significant. The correlation between budget allocations for Academic Support salaries and completion of 12 credit hours was not significant, $r(95) = .13$ and $H_0 4_1$ was retained.

The correlation between Academic Support salary budgets and completion of 24 credit hours was significant, $r(95) = .12$ and $H_0 4_2$ was rejected. The correlation between Academic Support salary budgets and completion of 36 credit hours was not significant, $r(82) = .21$ and $H_0 4_3$ was retained. The correlation between Academic Support salary budgets and awards of technical certificates was not significant, $r(95) = -.18$ and $H_0 4_4$ was retained. The correlation between Academic Support salary budgets and awards of associate degrees was not significant, $r(82) = .14$ and $H_0 2_5$ was retained.

Table 10

Bivariate Correlations of Salaries of Academic Support Budget Allocations and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	.13	.221
Completion of 24 hrs.	95	.12	.266
Completion of 36 hrs.	82	.21	.058
Awards of Tech. Cert.	95	-.18	.225
Awards of Associate Degrees	82	.14	.087

Research Question 5

Research Question 5: Is there a significant relationship between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges student success as measured by community college performance outcomes (number of students completing 12

credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_05_1: There is no significant relationship between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_05_2: There is no significant relationship between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_05_3: There is no significant relationship between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_05_4: There is no significant relationship between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_05_5: There is no significant relationship between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between budget allocations for operations of Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded).

The results of these analyses, presented in Table 11, show these correlations were not statistically significant. The correlation between budget allocations for operations of Instruction and completion of 12 credit hours was not significant, $r(95) = -.13$ and $H_0 5_1$ was retained. The correlation between budget allocations for operations of Instruction and completion of 24 credit hours was not significant, $r(95) = -.15$ and $H_0 5_2$ was retained. The correlation between budget allocations for operations of Instruction and completion of 36 credit hours was not significant, $r(82) = -.13$ and $H_0 5_3$ was retained. The correlation between budget allocations for operations of Instruction and awards of technical certificates was not significant, $r(95) = -.17$ and $H_0 5_4$ was retained. The correlation between budget allocations for operations of Instruction and awards of associate degrees was not significant, $r(82) = -.19$ and $H_0 5_5$ was retained.

Table 11

Bivariate Correlations of Operations of Instruction Budget Allocations and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	-.13	.200
Completion of 24 hrs.	95	-.15	.158
Completion of 36 hrs.	82	-.13	.238
Awards of Tech. Cert.	95	-.17	.095
Awards of Associate Degrees	82	-.19	.096

Research Question 6

Research Question 6: Is there a significant relationship between budget allocations for salaries for Instruction Student Services per FTE at Tennessee's 13 public community colleges student success as measured by community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

H_06_1: There is no significant relationship between budget allocations for salaries for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_06_2: There is no significant relationship between budget allocations for salaries for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_06_3: There is no significant relationship between budget allocations for salaries for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_06_4: There is no significant relationship between budget allocations for salaries for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_06_5: There is no significant relationship between budget allocations for salaries for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships

between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded).

The results of these analyses, presented in Table 12, show three of the five correlations were statistically significant and two were not significantly significant. The correlation between budget allocations for salaries for Instruction and completion of 12 credit hours was not significant, $r(95) = .19$ and $H_0 6_1$ was retained. The correlation between budget allocations for salaries for Instruction and completion of 24 credit hours was significant, $r(95) = .21$, $p = .038$ and $H_0 6_2$ was rejected. The correlation between budget allocations for salaries for Instruction and completion of 36 credit hours was significant, $r(82) = .31$, $p = .005$ and $H_0 6_3$ was rejected. The correlation between budget allocations for salaries for Instruction and awards of technical certificates was not significant, $r(95) = -.15$ and $H_0 6_4$ was retained. The correlation between budget allocations for salaries for Instruction and awards of associate degrees was significant, $r(82) = .28$, $p = .011$ and $H_0 6_5$ was rejected.

Table 12

Bivariate Correlations of Salaries of Instruction Budget Allocations and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	.19	.063
Completion of 24 hrs.	95	.21*	.038
Completion of 36 hrs.	82	.31*	.005
Awards of Tech. Cert.	95	-.15	.136
Awards of Associate Degrees	82	.28*	.011

Note. An asterisk (*) indicates statistical significance at the $p < .05$ *level*.

Research Question 7

Research Question 7: Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)?

$H_0 7_1$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 12 credit hours?

H_07_2: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 24 credit hours?

H_07_3: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of completion of 36 credit hours?

H_07_4: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction , and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of technical certificates awarded?

H_07_5: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's 13 public community colleges and student success as measured by the performance outcomes of the number of associate degrees awarded?

The results of these analyses, presented in Table 13, show these correlations were not statistically significant. The correlation between combined budget allocations and completion of 12 credit hours was not significant, $r(95) = .06$ and H_07_1 was retained. The correlation between

combined budget allocations and completion of 24 credit hours was not significant, $r(95) = .07$ and $H_0 7_2$ was retained. The correlation between combined budget allocations and completion of 36 credit hours was not significant, $r(82) = .17$ and $H_0 7_3$ was retained. The correlation between combined budget allocations and awards of technical certificates was not significant, $r(95) = -.15$ and $H_0 7_4$ was retained. The correlation between combined budget allocations and awards of associate degrees was not significant, $r(82) = .12$ and $H_0 7_5$ was retained.

Table 13

Bivariate Correlations of Combined Budget Allocations for Instruction, Academic Support, and Student Services and Performance Outcomes for Community Colleges

Performance outcome	N	*r*	*p*
Completion of 12 hrs.	95	.06	.574
Completion of 24 hrs.	95	.07	.484
Completion of 36 hrs.	82	.17	.131
Awards of Tech. Cert.	95	-.15	.144
Awards of Associate Degrees	82	.12	.297

Research Question 8

Research Question 8: Is there a significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 8_1$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 8_2$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 8_3$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 8_4$: There is no significant relationship between operational budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between operational budget allocations for Student Services per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 14, show three of the four correlations were statistically significant. A Pearson product-moment correlation coefficient (r) was computed to test the relationship between university operational budget allocations for Student Services and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between Student Services operations budgets and completion of 24 credit hours was significant, $r(65) = -.39$, $p = .001$ and $H_0 8_1$ was rejected.

The correlation between Student Services operations budgets and completion of 48 credit hours was significant, $r(56) = -.42$, $p = .001$ and $H_0 8_2$ was rejected. The correlation between Student Services operations budgets and completion of 72 credit hours was significant, $r(47) = -.35$, $p = .015$ and $H_0 8_3$ was rejected. The correlation between Student Services operations budgets and awards of bachelor degrees was not significant, $r(37) = -.11$ and $H_0 8_4$ was retained.

Table 14

Bivariate Correlations of Budget Allocations for Operation of Student Services and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.39*	.001
Completion of 48 hrs.	56	-.42*	.001
Completion of 72 hrs.	47	-.35*	.015
Awards of Bachelor Degrees	36	-.11	.515

Note. An asterisk (*) indicates statistical significance at the $p < .05$ *level.*

Research Question 9

Research Question 9: Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 9_1$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 9_2$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 9_3$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 9_4$: There is no significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between salary budget allocations for Student Services per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 15, show all correlations were statistically significant. A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between university salary budget allocations for Student Services and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between Student Services salary budgets and completion of 24 credit hours was significant, $r(65) = -.46$, $p = .000$ and $H_0 9_1$ was rejected. The correlation

between Student Services salary budgets and completion of 48 credit hours was significant, $r(56) = -.48$, $p < .001$ and $H_0 9_2$ was rejected. The correlation between Student Services salary budgets and completion of 72 credit hours was significant, $r(47) = -.57$, $p < .001$ and $H_0 9_3$ was rejected. The correlation between Student Services salary budgets and awards bachelor degrees was significant, $r(37) = -.43$, $p = .008$ and $H_0 9_4$ was rejected.

Table 15

Bivariate Correlations of Budget Allocations for Salaries of Student Services and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.46*	< .001
Completion of 48 hrs.	56	-.48*	< .001
Completion of 72 hrs.	47	-.57*	< .001
Awards of Bachelor Degrees	36	-.43*	.008

Note. An asterisk (*) indicates statistical significance at the *p < .05 level.*

Research Question 10

Research Question 10: Is there a significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 10_1$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 10_2$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 10_3$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 10_4$: There is no significant relationship between operational budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between budget allocations for operations of Academic Supports per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 16, show two of the four correlations were statistically significant. A Pearson product-moment correlation coefficient (r) was computed to test the relationship between university budget allocations for operations of Academic Support and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between budget allocations for operations of Academic Support and completion of 24 credit hours was not significant, $r(65) =$

-.17 and $H_0 10_1$ was retained. The correlation between budget allocations for operations of Academic Support and completion of 48 credit hours was not significant, $r(56) = .16$ and $H_0 10_2$ was retained. The correlation between budget allocations for operations of Academic Supports and completion of 72 credit hours was significant, $r(47) = .33$, $p = .022$ and $H_0 10_3$ was rejected. The correlation between budget allocations for operations of Academic Support and awards of bachelor degrees was significant, $r(36) = .45$, $p = .007$ and $H_0 10_4$ was rejected.

Table 16

Bivariate Correlations of Budget Allocations for Operations of Academic Support and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.17	.166
Completion of 48 hrs.	56	.16	.254
Completion of 72 hrs.	47	.33*	.022
Awards of Bachelor Degrees	36	.45*	.007

Note. An asterisk (*) indicates statistical significance at the $p < .05$ *level.*

Research Question 11

Research Question 11: Is there a significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 11_1$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 11_2$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 11_3$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 11_4$: There is no significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between budget allocations for salaries for Academic Supports per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 17, show two of the four correlations were statistically significant. A Pearson product-moment correlation coefficient (r) was computed to test the relationship between university budget allocations for salaries for Academic Support and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between budget allocations for salaries for Academic Support and completion of 24 credit hours was significant, $r(65) = -.58$, $p < .001$ and

$H_0 11_1$ was rejected. The correlation between budget allocations for salaries for Academic Support and completion of 48 credit hours was significant, $r(56) = -.31$, $p = .019$ and $H_0 11_2$ was rejected. The correlation between budget allocations for salaries for Academic Supports and completion of 72 credit hours was not significant, $r(47) = -.22$ and $H_0 11_3$ was retained. The correlation between budget allocations for salaries for Academic Support and awards of bachelor degrees was not significant, $r(36) = .01$ and $H_0 11_4$ was retained.

Table 17

Bivariate Correlations of Budget Allocations for Salaries of Academic Support and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.58*	< .001
Completion of 48 hrs.	56	-.31*	.019
Completion of 72 hrs.	47	-.22	.141
Awards of Bachelor Degrees	36	.01	.960

Note. An asterisk (*) indicates statistical significance at the *p < .05 level.*

Research Question 12

Research Question 12: Is there a significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

H_012_1: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

H_012_2: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

H_012_3: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

H_012_4: There is no significant relationship between operational budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between budget allocations for operations of Instruction per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 18, show three of the four correlations were statistically significant. A Pearson product-moment correlation coefficient (r) was computed to test the relationship between university budget allocations for operations of Instruction and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between budget allocations for operations of Instruction and completion of 24 credit hours was significant, $r(65) = -.67$, $p < .001$ and H_012_1

was rejected. The correlation between budget allocations for operations of Instruction and completion of 48 credit hours was significant, $r(56) = -.58$, $p < .001$ and $H_0 12_2$ was rejected. The correlation between budget allocations for operations of Instruction for operations of Instruction and completion of 72 credit hours was significant, $r(47) = -.35$, $p = .016$ and $H_0 12_3$ was rejected. The correlation between budget allocations for operations of Instruction and awards of bachelor degrees was not significant, $r(36) = .10$ and $H_0 12_4$ was retained.

Table 18

Bivariate Correlations of Budget Allocations for Operations of Instruction and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.67*	< .001
Completion of 48 hrs.	56	-.58*	< .001
Completion of 72 hrs.	47	-.35*	.016
Awards of Bachelor Degrees	36	.10	.554

Note. An asterisk (*) indicates statistical significance at the *p < .05 level.*

Research Question 13

Research Question 13: Is there a significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 13_1$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 13_2$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 13_3$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 13_4$: There is no significant relationship between salary budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between budget allocations for salaries for Instruction per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 19, show one of the four correlations was statistically significant. A Pearson product-moment correlation coefficient (r) was computed to test the relationship between university budget allocations for salaries for Instruction and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between budget allocations for salaries for Instruction and completion of 24 credit hours was significant, $r(65) = -.60$, $p < .001$ and

$H_0 13_1$ was rejected. The correlation between budget allocations for salaries for Instruction and completion of 48 credit hours was not significant, $r(56) = -.25$ and $H_0 13_2$ was retained. The correlation between budget allocations for salaries for Instruction and completion of 72 credit hours was not significant, $r(47) = -.09$ and $H_0 13_3$ was retained. The correlation between budget allocations for salaries for Instruction and awards of bachelor degrees was not significant, $r(36) = .07$ and $H_0 13_4$ was retained.

Table 19

Bivariate Correlations of Budget Allocations for Salaries of Instruction and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.60*	< .001
Completion of 48 hrs.	56	-.25	.068
Completion of 72 hrs.	47	-.09	.555
Awards of Bachelor Degrees	36	.07	.689

Note. An asterisk (*) indicates statistical significance at the $p < .05$ *level.*

Research Question 14

Research Question 14: Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

$H_0 14_1$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 24 credit hours?

$H_0 14_2$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 48 credit hours?

$H_0 14_3$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of completion of 72 credit hours?

$H_0 14_4$: There is no significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the performance outcomes of the number of bachelor degrees awarded?

A series of bivariate correlation coefficients were computed to test the relationships between combined budget allocations per FTE at Tennessee's 9 public universities and student success as measured by the performance outcomes (number of students completing 24 credit

hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded).

The results of these analyses, presented in Table 20, show two of the four correlations were statistically significant. A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between combined university budget allocations and the performance outcomes of completion of 24 credit hours, 48 hours, and 72 hours and awards of bachelor degrees. The correlation between budget combined allocations and completion of 24 credit hours was significant, $r(65) = -.69$, $p < .001$ and $H_0 14_1$ was rejected. The correlation between combined budget allocations and completion of 48 credit hours was significant, $r(56) = -.45$, $p = .001$ and $H_0 14_2$ was rejected. The correlation between budget allocations for salaries for Instruction and completion of 72 credit hours was not significant, $r(47) = -.26$ and $H_0 14_3$ was retained. The correlation between combined budget allocations and awards of bachelor degrees was not significant, $r(36) = .05$ and $H_0 14_4$ was retained.

Table 20

Bivariate Correlations of Combined Budget Allocations for Instruction, Academic Support, and Student Services and Performance Outcomes for Universities

Performance outcome	N	*r*	*p*
Completion of 24 hrs.	65	-.69*	< .001
Completion of 48 hrs.	56	-.45*	.001
Completion of 72 hrs.	47	-.26	.075
Awards of Bachelor Degrees	36	.05	.752

Note. An asterisk (*) indicates statistical significance at the *p < .05 level.*

Research Question 15

Research Question 15: To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's 13 public community colleges predict student success as measured by the five performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded and number of associate degrees awarded)?

$H_0 15_1$: There is no relationship between the budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's 13 public community colleges and student success as measured by the five performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded and number of associate degrees awarded)?

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcome of completion of 12 credit hours per 100 FTE for community colleges. The results of this analysis show there is no significant relationship between budget function allocations per FTE and performance outcome of completion of 12 credit hours per 100 FTE for community colleges.

A multiple regression analysis was conducted to evaluate how well budget function allocations predicted performance outcome of completion of 24 credit hours for community colleges. The results of this analysis show there is no significant relationship between budget

function allocations predicted performance outcome of completion of 24credit hours per 100 FTE for community colleges.

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcome of number of students completing 36 credit hours per 100 FTE for community colleges. The predictors were the six budget allocations areas. The results of this analysis are shown in Table 21 The linear combination of budget allocations per FTE was significantly related to the performance outcome of completion of number of students completing 36 credit hours per 100 FTE, $F(6, 75) = 2.45$, $p = .032$. The sample multiple correlation coefficient was .41, indicating that 16% of the variance of completion of 36 credit hours can be accounted for by the linear combination of budget allocations. The regression equation for predicting number of students completing 36 credit hours per 100 FTE is:

Predicted Number of Students Completing 36 Credit hours per 100 FTE = .034 -.003 *Operations of Student Services* + .038 *Salaries of Student Services* -.193 *Operations of Academic Support* + .087 *Salaries of Academic Support* -.191*Operations of Instruction* + .306 *Salaries of Instruction*

Table 21

Summary of Multiple Regression Analysis for Number of Students Completing 36 hours per 100 FTE for Community Colleges

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	-.003	.163	-.003	-.017	.986
Salaries of Student Services	.038	.160	.038	.235	.815
Operations of Academic Support	-.193	.121	-.193	-1.600	.114
Salaries of Academic Support	.087	.135	.083	.645	.521
Operations of Instruction	-.191	.124	-.195	-1.546	.126
Salaries of Instruction	.306	.127	.299	2.412	.018

Note. $R^2 = .164$

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcome of number of technical certificates awarded per 100 FTE for community colleges. The predictors were the six budget allocations areas. The results of this analysis are shown in Table 22. The linear combination of budget allocations per FTE was significantly related to the performance outcome of completion of number of technical certificates awarded per 100 FTE, $F(6, 88) = 2.316$, $p = .04$. The sample multiple correlation coefficient was .37, indicating that 14% of the variance of awards of technical certificates can be accounted for by the linear combination of budget allocations. The regression equation for predicting number of number of technical certificates awarded per 100 FTE is:

Predicted Number of Technical Certificates Awarded per 100 FTE = -2.665E-17 + .006 *Operations of Student Services* + .285 *Salaries of Student Services* -.150 *Operations of*

Academic Support -.209 *Salaries of Academic Support* -.073*Operations of Instruction* - .147 *Salaries of Instruction*

Table 22

Summary of Multiple Regression Analysis for Number Technical Certificates Awarded per 100 FTE for Community Colleges

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	.006	.143	.006	.042	.966
Salaries of Student Services	.285	.143	.285	1.991	.050
Operations of Academic Support	-.150	.116	-.150	-1.293	.199
Salaries of Academic Support	-.209	.122	-.209	-1.710	.091
Operations of Instruction	-.073	.114	-.073	-.643	.522
Salaries of Instruction	-.147	.118	-.147	-1.248	.215

Note. $R^2 = .136$

A multiple regression analysis was conducted to evaluate how well the budget function allocations predicted performance outcome of number of associate degrees awarded for community colleges. The predictors were the six budget allocations areas and the sum of those allocations. The results of this analysis are shown in Table 23. The linear combination of budget allocations was significantly related to the performance outcome of number of associate degrees awarded, $F(6, 75) = 2.394$, $p = .036$. The sample multiple correlation coefficient was .40, indicating that 16% of the variance of number of associate degrees awarded can be accounted for by the linear combination of budget allocations. The regression equation for predicting number of associate degrees awarded is:

Predicted Number of Associate Degrees Awarded = .025 + .037 *Operations of Student Services* -.008 *Salaries of Student Services* -.225 *Operations of Academic Support* +.021 *Salaries of Academic Support* -.240 *Operations of Instruction* + .322 *Salaries of Instruction*

Table 23

Summary of Multiple Regression Analysis for Community College Awards of Associate Degree

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	.037	.164	-.003	.226	.822
Salaries of Student Services	-.008	.160	.036	-.048	.962
Operations of Academic Support	-.225	.121	-.225	-1.863	.066
Salaries of Academic Support	.021	.135	.020	.153	.879
Operations of Instruction	-.240	.124	-.246	-1.940	.056
Salaries of Instruction	.322	.127	.314	2.527	.014

Note. R^2 = .164

Research Question 16

Research Question 16: To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's nine public universities predict student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded) ?

$H_0 16_1$: There is no relationship between budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's nine public universities and student success as measured by the performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded) ?

A multiple regression analysis was conducted to evaluate how well budget function allocations predicted performance outcome of completion of 24 credit hours for universities. The results of this analysis are shown in Table 24. The predictors were the six budget allocations areas. The linear combination of budget allocations was significantly related to the performance outcome of completion of 24 credit hours, $F(6, 58) = 13.05$, $p < .001$. The sample multiple correlation coefficient was .76, indicating that 58% of the variance of completion of 24 credit hours can be accounted for by the linear combination of budget allocations. The regression equation for predicting completion of 24 hours is:

Predicted Completion of 24 hours = -6.795E-16 + .173 *Operations of Student Services* -.005 *Salaries of Student Services* + .191 *Operations of Academic Support* + .287 *Salaries of Academic Support* – .638 *Operations of Instruction* -.705 *Salaries of Instruction*

Table 24

Summary of Multiple Regression Analysis for University Completion of 24 Credit Hours

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	.173	.132	.173	1.308	.196
Salaries of Student Services	-.005	.148	-.005	-.034	.973
Operations of Academic Support	.191	.142	.191	1.351	.182
Salaries of Academic Support	.287	.188	.287	1.524	.133
Operations of Instruction	-.638	.129	-.638	-4.928	< .001
Salaries of Instruction	-.705	.248	-.705	-2.842	.006

Note. $R^2 = .583$

A multiple regression analysis was conducted to evaluate how well budget function allocations predicted performance outcome of completion of 48 hours for universities. The results of this analysis are shown in Table 25. The predictors were the six budget allocations areas. The linear combination of budget allocations was significantly related to the performance outcome of completion of 48 credit hours, $F(6, 49) = 6.63$, $p < .001$. The sample multiple correlation coefficient was .67, indicating that 45% of the variance of completion of 48 credit hours can be accounted for by the linear combination of budget allocations. The regression equation for predicting completion of 48 hours is:

Predicted Completion of 48 hours = -.029 + .121 *Operations of Student Services* -.494 *Salaries of Student Services* + .041 *Operations of Academic Support* + .101 *Salaries of Academic Support* – .566 *Operations of Instruction* + .161 *Salaries of Instruction*

Table 25

Summary of Multiple Regression Analysis for University Completion of 48 Credit Hours

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	.121	.174	.119	.695	.490
Salaries of Student Services	-.494	.199	-.464	-2.478	.017
Operations of Academic Support	.041	.177	.041	.235	.816
Salaries of Academic Support	.101	.240	.099	.420	.677
Operations of Instruction	-.566	.162	-.584	-3.501	.001
Salaries of Instruction	-.161	.319	.157	.505	.616

Note. $R^2 = .448$

A multiple regression analysis was conducted to evaluate how well budget function allocations predicted performance outcome of completion of 72 hours for universities. The results of this analysis are shown in Table 26. The predictors were the six budget allocations areas. The linear combination of budget allocations was significantly related to the performance outcome of completion of 72 credit hours, $F(6, 40) = 8.00$, $p < .001$. The sample multiple correlation coefficient was .74, indicating that 55% of the variance of completion of 72 credit hours can be accounted for by the linear combination of budget allocations. The regression equation for predicting completion of 72 hours is:

Predicted Completion of 48 hours =-.153 + .064 *Operations of Student Services* -1.043 *Salaries of Student Services* - .041 *Operations of Academic Support* -.413 *Salaries of Academic Support* - .137*Operations of Instruction* + .930 *Salaries of Instruction*

Table 26

Summary of Multiple Regression Analysis for University Completion of 72 Credit Hours

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	.064	.181	.062	.354	.725
Salaries of Student Services	-1.043	.207	-.923	-5.032	< .001
Operations of Academic Support	-.041	.170	-.042	-.242	.810
Salaries of Academic Support	-.413	.247	-.405	-1.672	.102
Operations of Instruction	-.137	.166	-.134	-.823	.416
Salaries of Instruction	.930	.334	.882	2.789	.008

Note. $R^2 = .545$

A multiple regression analysis was conducted to evaluate how well budget function allocations predicted performance outcome of number of bachelor degrees awarded for universities. The results of this analysis are shown in Table 27. The predictors were the six types of budget allocations. The linear combination of budget allocations was significantly related to the performance outcome of number of bachelor degrees awarded, $F(6, 29) = 5.07$, $p = .001$. The sample multiple correlation coefficient was .72, indicating that 51% of the variance of number of bachelor degrees awarded can be accounted for by the linear combination of budget allocations. The regression equation for predicting number of bachelor degrees awarded is:

Predicted Completion of 48 hours = -.138 + .084 *Operations of Student Services* -.987 *Salaries of Student Services* + .117 *Operations of Academic Support* -.425 *Salaries of Academic Support* +.360*Operations of Instruction* + .842 *Salaries of Instruction*

Table 27

Summary of Multiple Regression Analysis for University Awards of Bachelor Degrees

Predictor variable	B	SE(B)	β	*t*	*p*
Operations of Student Services	.084	.214	.085	.394	.697
Salaries of Student Services	-.987	.245	-.890	-4.033	< .001
Operations of Academic Support	.117	.199	.112	.590	.560
Salaries of Academic Support	-.425	.299	-.420	-1.423	.165
Operations of Instruction	.360	.205	.352	1.753	.090
Salaries of Instruction	.842	.385	.794	2.185	.037

Note. $R^2 = .512$

Summary

This chapter presented the descriptive and correlation analyses for budget function allocations and performance outcome measures for the 13 public community colleges and nine public universities of Tennessee from 2006 through 2013. Sixteen Research Questions and 65 null hypotheses directed data analysis. Bivariate correlations and multiple regression analyses were used to determine relationships between budget function allocations and performance outcome measures for community colleges and universities. From these tests, 11 out of the 16 Research Questions had significant findings. A summary of these findings, as well as conclusions, implications for policy and practice, and recommendations for further study are presented in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, IMPLICATIONS FOR POLICY AND PRACTICE, AND RECOMMENDATIONS FOR FUTURE RESEARCH

This chapter includes a summary of findings, conclusions, implications for policy and practice, and recommendations for future research. The purpose of this study was to identify significant budget allocations that predict student success performance outcomes as defined by the Complete College Tennessee Act of 2010 (CCTA). Analyses involved examining the relationships between October revised budgets for all of Tennessee's public community colleges and universities and the corresponding performance outcomes from 2006 through 2014. Predictor variables included budget function allocations per FTE for academic salaries, operations of Instruction, salaries for Academic Support, operations for Academic Support, salaries for Student Services, and operations for Student Services. Criterion variables were delineated using Carnegie classification of institution and recorded per 100 FTE of each institution. Community college criterion variables were number of students completing 12 credit hours, completing 24 credit hours, completing 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded per 100 FTE. University criterion variables were number of students completing 24 credit hours, completing 48 credit hours, completing 72 credit hours, and number of bachelor degrees awarded per 100 FTE. Bivariate correlation and multiple regression analyses were used to answer the Research Questions.

Summary of Findings

Chapter 1 of this dissertation presents 16 Research Questions used as the basis for statistical analysis. These Research Questions are reported again in Chapter 3 along with the corresponding hypotheses. A series of bivariate correlations was used to analyze the hypotheses for Research Questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14. Multiple regression analysis was used to analyze each of the hypotheses for Research Questions 15 and 16. The level of significance applied in the statistical analysis was $p < .05$. Analysis of 13 of the 16 Research Questions yielded statistically significant findings.

Descriptive statistics were used to demonstrate and compare trends in the data prior to and after the implementation of Complete College Tennessee Act of 2010. Allocations for operations of Academic Support for community colleges changed the most conspicuously with a 15.87% increase followed by operations for Instruction at 7.07% increase. Salaries for academics and Student Services decreased by 2.81% and 3.45%, respectively, while other allocations remained stable. The aggregate of budget allocations for community colleges increased 0.78% per FTE. All allocations per FTE for university budget functions increased over the time frames of the study with operations for Instructions having the highest gains at 23.59% followed by increases in salaries for Student Services and operations for Academic Support at 11.8% and 11.35%, respectively. The remaining allocations had increases ranging from 1.64% to 6.21% with the aggregate of university allocations increasing by 8.05%. It is to be noted that these figures were not corrected for inflation that averaged 2.23% annually from 2006 through 2013. Therefore, as these changes are not uniform across the board, it may be surmised that institutional planning played an influential role in the progression. As an example, the increased

use of part time faculty would be causation for an overall drop in academic salaries for community colleges. Other allocations could have been increased in an effort to enhance performance outcome measures related to student success.

The means of the performance outcome measures for community colleges over the timeframe were mixed with three of the five outcomes having substantial declines; completion of 12 credit hours (-39.66%), 24 credit hours (-29.01%), and 36 credit hours (-20.27%) per 100 FTE. Two of the outcome measures had substantial increases; awards of technical certificates (45.51%) and associate degrees (23.70%) per 100 FTE. The results for the university outcomes per 100 FTE for the time period were similar and also mixed but not as dramatic with completion of 24 credit hours (-19.20%), 48 credit hours (-7.67%), and 72 credit hours (-0.32%) declining. The number of bachelor degrees awarded per 100 FTE increased by 12.49%.

Research Question 1

Is there a significant relationship between operations budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (r) was computed to test the relationship between operations budget allocations for Student Services and performance outcomes of community colleges. No significant relationships were determined in analysis of Research Question 1.

Research Question 2

Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between salary budget allocations of Student Services and performance outcomes of community colleges. The relationship of salary allocations for Student Services and number of technical certificates awarded was significant *(r = .20)* and suggests that an increase in spending per FTE for Student Services salaries may increase the number of technical certificates awarded per 100 FTE. No other significant relationships were found in the analysis of Research Question 2.

Research Question 3

Is there a significant relationship between operations budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between operations budget Academic Support and performance outcomes of community colleges. No significant relationships were determined in analysis of Research Question 3.

Research Question 4

Is there a significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between salary budget allocations of Academic Support and performance outcomes of community colleges. No significant relationships were determined in analysis of Research Question 4.

Research Question 5

Is there a significant relationship between operations budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between operations budget allocations for Instruction and performance outcomes of community colleges. No significant relationships were determined in analysis of Research Question 5.

Research Question 6

Is there a significant relationship between salary budget allocations for Instruction per FTE at Tennessee's 13 public community colleges and student success as measured by the five

community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between salary budget allocations for academics and performance outcomes of community colleges. The relationships of salary allocations for Instruction and completion of 24 hours, completion of 36 hours, and awards of associate degrees were significant *(r = .21, .31, and .28,* respectively*)*. These weak to moderate correlations suggest that an increase in spending per FTE for salaries for Instruction may increase the success rates of students in community college per 100 FTE in three of the five performance outcomes. No other significant relationships were determined in analysis of Research Question 6.

Research Question 7

Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for academics at Tennessee's 13 public community colleges and student success as measured by the five community college performance outcomes (number of students completing 12 credit hours, completing of 24 credit hours, completing of 36 credit hours, number of technical certificates awarded, and number of associate degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between the combined allocations and performance outcomes of community colleges. No significant relationships were determined in analysis of Research Question 7.

Research Question 8

Is there a significant relationship between operations budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between operations budget allocations for Student Services and performance outcomes of universities. Three of the four performance outcomes for universities were found to be significantly correlated to allocations for operations of Student Services as follows: completion of 24 credit hours ($r = -.39$), completion of 48 credit hours ($r = -.42$), and completion of 72 hours ($r = -.35$). These results indicate moderate negative relationships over the period of the study as operations for Student Services spending increased per FTE and performance outcomes per 100 FTE declined. The number of bachelor degrees awarded was not significantly related to allocations for operations of Student Services.

Research Question 9

Is there a significant relationship between salary budget allocations for Student Services per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between salary budget allocations for Student Services and performance outcomes of universities. All four of the university performance outcomes were significantly correlated to

salary budget allocations for Student Services as follows: completion of 24 credit hours (r = -*.46*), completion of 48 credit hours (r =-*.48*), completion of 72 credit hours (r = -*.57*), and number of bachelor degrees awarded (r = -*.43*). These results indicate moderate to strong negative relationships over the period of the study as Student Services salary spending increased per FTE and performance outcomes per 100 FTE declined. Completion of 72 hours is strong negatively correlated to salary budget allocations for Student Services.

Research Question 10

Is there a significant relationship between operations budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (r) was computed to test the relationship between operations budget allocations for Academic Support and performance outcomes of universities. Completion of 72 credit hours and the number of bachelor degrees awarded per 100 FTE were significantly correlated to Academic Support operations budget allocations per FTE (r = *.33 and .45*, respectively). This finding indicates a moderate positive relationship; it may be likely retention and progression initiatives implemented in the first year of a bachelor program are successful in aiding students toward completion of their undergraduate program. The other criterion variables were not significantly related to operations budget allocations for Academic Support.

Research Question 11

Is there a significant relationship between salary budget allocations for Academic Support per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between salary budget allocations for Academic Support and performance outcomes of universities. Budget allocations for salaries of Academic Support are significantly correlated to completion of 24 and 48 credit hours (*r = -.58 and -.31*, respectively). These results indicate a negative relationship over the period of the study as spending per FTE increased and performance outcomes per 100 FTE declined. A strong negative relationship exists between 24 credit hour completion and salaries of Academic Support, suggesting that adding staff to Academic Support departments may be counterproductive to student success in the first year of a bachelors program. The other criterion variables were not significantly related.

Research Question 12

Is there a significant relationship between operations budget allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between operations budget allocations for Instruction and performance outcomes of universities. Completion of 24, 48, and 72 credit hours were found significantly related to operations budget

allocations for Instruction (*r = -.67, -.58, and -.35*, respectively). These results indicate a negative relationship over the period of the study as per FTE spending increased and performance outcomes per 100 FTE declined. Completion of 24 and 48 hours had strong negative correlations to operations budget allocations for Instruction and suggests university spending on Instructional aids and materials may be counterproductive to student success in the first two years of a bachelor degree program. Awards of bachelor degrees was not found significantly related to the predictor variable in Research Question 12.

Research Question 13

Is there a significant relationship between salary allocations for Instruction per FTE at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between salary budget allocations for Instruction and performance outcomes of universities. Budget allocations for salaries for Instruction were found to be significantly related to completion of 24 credit hours (*r = -.60*). These results indicate a strong negative relationship over the period of the study as spending per FTE for Instructional salaries increased and the number of students completing 24 credits hours per 100 FTE declined. The other predictor variables were not significantly related to the criterion variables for Research Question 13.

Research Question 14

Is there a significant relationship between the combined budget allocations per FTE for operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction at Tennessee's nine public universities and student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)? A Pearson product-moment correlation coefficient (*r*) was computed to test the relationship between operations budget allocations and performance outcomes of universities. Completion of 24 and 48 credit hours were significantly correlated to the combined allocations ($r = -.69$ and -.45, respectively). These results indicate a strong negative relationship over the period of the study as spending per FTE increased and performance outcomes per 100 FTE declined. These results coincide with those of the individual criterions of completion of 24 and 48 credit hours and demonstrate a downtrend of student success per total budget allocations in the freshman and sophomore cohorts.

Research Question 15

To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's 13 public community colleges predict student success as measured by the five performance outcomes (number of students completing 12 credit hours, completing of 24 credit

hours, completing of 36 credit hours, number of technical certificates awarded and number of associate degrees awarded)?

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcomes per 100 FTE for community colleges. The results of this analysis show there no significant relationship between budget function allocations pre FTE and predicted performance outcome of completion of 12 and 24 credit hours per 100 FTE for community colleges.

A multiple regression analysis of the predictor variables and completion of 36 credit hours had a sample multiple correlation coefficient of .41, indicating that 16% of the variance of completion of 36 credit hours can be accounted for by the linear combination of budget allocations. The most useful predictor variable was Instructional salaries accounting for 9.4% of the variance in completion of 36 credit hours. However, r values for predictor variables for 36 credit hours of completion ranged from .01 to .21. Considering this in congruence with the variance of the predictor variable, salaries of Instruction is a weak factor.

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcome of number of technical certificates awarded per 100 FTE for community colleges. The sample multiple correlation coefficient was .37, indicating that 14% of the variance of awards of technical certificates can be accounted for by the linear combination of budget allocations. Salaries of Student Services was the most useful predictor as it accounted for 9.4% of the variance in awards of technical certificates. However, r values for predictor variables for awards of technical certificates of completion ranged from -.18 to .26 making it difficult to determine the relative importance of these factors.

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcome of number of associate degrees awarded per 100 FTE for community colleges. The multiple correlation coefficient was .40, indicating that 16% of the variance of awards of associate degrees can be accounted for by the linear combination of budget allocations. The most useful predictor variable was Instructional salaries, accounting for 7.8% of the variance in awards of associate degrees. However, r values for predictor variables for awards of associate degrees ranged from -.22 to .18 making it difficult to determine the relative importance of these factors.

Research Question 16

To what extent does a combination of budget function allocation variables per FTE (i.e., operations for Student Services, salary for Student Services, operations for Academic Support, salary for Academic Support, operations for Instruction, and salary for Instruction) at Tennessee's nine public universities predict student success as measured by the four university performance outcomes (number of students completing 24 credit hours, completing of 48 credit hours, completing of 72 credit hours, and number of bachelor degrees awarded)?

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted performance outcomes per 100 FTE for universities. The results of the multiple regression analysis between budget function allocations per FTE and completion of 24 credit hours had a sample multiple correlation coefficient of .76, indicating that 58% of the variance of completion of 24 credit hours can be accounted for by the linear combination of budget allocations. Operations and salaries of Instruction were the most useful predictors accounting for 56 % of the variance of completion of 24 credit hours. Predictor variables r

values for completion of 24 credit hours ranged from -.60 to -.17 indicating a strong to moderate negative relationship.

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted completion of 48 credit hours per 100 FTE for universities. The results of the multiple regression analysis between budget function allocations pre FTE and completion of 48 credit hours had a sample multiple correlation coefficient was .67, indicating that 45% of the variance of completion of 48 credit hours can be accounted for by the linear combination of budget allocations. Operations of Instruction and Student Services salaries were the most useful predictors accounting for 41% of the variance of completion of 48 credit hours. Predictor variable r values for completion of 48 credit hours were mixed and ranged from -.58 to .16 making judgement of value difficult.

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted completion of 72 credit hours per 100 FTE for universities. The results of the multiple regression analysis between budget function allocations per FTE and completion of 72 credit hours had a sample multiple correlation coefficient of .74, indicating that 55% of the variance of completion of 72 credit hours can be accounted for by the linear combination of budget allocations. Student Services salaries, Instruction salaries, and Academic Support salaries were the most useful predictors accounting for 53% of the variance of completion of 72 credit hours. However, predictor variable r values for completion of 72 credit hours ranged from strong negative (-.57) to moderate positive (.33) rendering assessment as to the value of the predictor difficult.

A multiple regression analysis was conducted to evaluate how well budget function allocations per FTE predicted number of bachelor degrees awarded per 100 FTE for universities.

The results of the multiple regression analysis between budget function allocations pre FTE and bachelor degrees awarded had a sample multiple correlation coefficient of .72, indicating that 51% of the variance of number of bachelor degrees awarded can be accounted for by the linear combination of budget allocations. Operations of Academic Support, Student Services salaries and Instruction salaries were the most useful predictors accounting for 41% of the variance of number of bachelor degrees awarded. However, predictor variable r values for number of bachelor degrees awarded ranged from moderate negative (-.43) to moderate positive (.45) rendering assessment of the value difficult.

Conclusions

The concurrence of the downtrend in first year student performance outcomes with increases in many budget allocations confirms the conclusions of prior researchers that noninstitutional factors greatly determine student completion and success (Boden, 2012; Tinto, 1975). Community college performance outcome values per 100 FTE declined in three of the five categories and total spending per FTE over the time period of the study for community colleges was essentially flat at a 0.78% increase with marked growth in allocations for Academic Support (15.87%) and operations of Instruction (7.07%). However, no significant relationships were determined to exist between these predictor variables and the criterion variables. Salaries for Instruction decreased by 2.81% and were found to have significant positive correlations with student success factors of completion of credit hours in the first 2 years of enrollment at community college and also number of students attaining associate degrees, confirming the research of Webster and Showers (2011). The number of technical certificates awarded were significantly correlated to salary allocations for Student Services. However, this appears to be a

statistical anomaly as the number of technical certificates awarded were very low in the early years of the study and increased slightly over time.

University spending per FTE increased in each budget function area while performance outcomes decreased in three of the four categories. Analysis results were mixed with negative correlations between student success performance outcomes and allocations for salaries of Student Services, operations of Student Services, salaries for Academic Support, and operations for Instruction. However, awards of bachelor degrees and completion of 72 hours were positively correlated with operations of Academic Support. In comparison with community colleges, university salaries for Instruction were not significantly correlated to performance outcomes except for completion of 24 credit hours that had a negative relationship.

Implications for Policy and Practice

The purpose of this research was to identify relationships between budget function allocations and performance outcomes as defined by the Complete College Tennessee Act of 2010 for Tennessee public community colleges and universities. The results of this research have a number of important implications for senior administrators at the institutional and systems levels in Tennessee and across the United States.

1. Allocations at Tennessee institutions of higher education for programs to enhance student success for freshmen and sophomores should be reviewed for effectiveness.
2. At the community college level, allocations for salaries for Instruction should be of primary consideration when strategic budget decisions are made.

3. Academic Support allocations for programs such as early-alert systems, student tracking software, tutoring, service learning, and intensive advising should produce positive results in undergraduate degree completions for universities.
4. Technical certificates are a growth area for community colleges and a performance outcome category with potential to improve state appropriations while providing short term completers.
5. Collaborative initiatives between universities and feeder community colleges should be explored for opportunities to open communications and share resources to enhance student success in areas such as counseling.

Recommendations for Future Research

This quantitative study was conducted within the limitations outlined in Chapter 1. Several recommendations for expanding this study include:

1. An expansive, longitudinal quantitative study of the effectiveness of the Complete College Tennessee Act of 2010 could provide a greater understanding of performance funding as a tool for enhancing student success.
2. A qualitative study of Academic Support initiatives across Tennessee could reveal successful programs for the advancement of performance outcomes for TBR and UT institutions.
3. A group of mixed studies could determine the causation of the declining trend in performance outcomes relating to the first 2 years of college. From the related literature, the topics for these studies should include the following: (a) impact of

adjunct, part-time, and graduate assistant instructors; (b) effect of computer based remedial instruction; and (c) preparedness for college of entering freshmen.

4. Correlational studies involving state appropriations to institutions and performance outcomes could determine the relationship of performance funding as an incentive instrument for colleges and universities.
5. A comparative analysis of the impact of Tennessee Promise on performance outcomes of Tennessee public community colleges would be beneficial to administrators in strategic budgeting.

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APPENDICES

Appendix A

National Percentages of Budgets Expenditures

National percentages of total budgets for expenditures of public degree-granting postsecondary institutions, by purpose of expenditure and level of institution: 2005-06 through 2011-12 (NCES, 2015b).

Institution level and year	Instruction			Public service	Academic Support	Student Services	Institu-tional support	Plant Operation	Deprec -iation
	Total	Salaries	Research						
4-year									
2005-06	25.41	17.31	12.38	4.87	6.60	3.71	6.94	6.18	4.58
2006-07	25.88	17.61	12.17	4.82	6.71	3.79	7.16	6.13	4.66
2006-07	25.23	16.99	11.75	4.67	6.72	3.74	7.34	6.06	5.09
2008-09	25.41	17.16	11.82	4.66	6.79	3.82	7.32	6.13	5.20
2009-10	25.31	16.96	12.19	4.67	6.67	3.80	7.10	5.94	5.35
2010-11	25.07	16.71	12.13	4.59	6.50	3.77	7.15	5.90	5.45
2011-12	24.75	16.44	11.78	4.45	6.62	3.83	6.93	5.85	5.61
2-year									
2005-06	38.79	27.17	0.06	1.71	7.44	9.21	13.87	8.92	3.84
2006-07	38.48	26.83	0.04	1.62	7.39	9.24	13.85	8.84	3.82
2006-07	38.26	26.49	0.04	1.63	7.46	9.11	13.90	8.75	4.07
2008-09	37.37	26.19	0.05	1.56	7.35	9.08	13.79	8.46	4.20
2009-10	35.24	24.98	0.04	1.47	6.89	8.57	12.39	8.56	3.90
2010-11	34.52	24.22	0.04	1.41	6.66	8.19	12.09	8.44	4.10
2011-12	34.54	24.08	0.04	1.41	6.75	8.38	12.43	8.28	4.38

Appendix B

Sample Institution Annual Budget

Unrestricted Expenditures And Transfers By Major Functional Area And Account For Fiscal Year											
SAMPLE											
		Public	Academic	Student	Inst.	Operation &	Scholar/	Total			
	Instruction	Research	Support	Services	Services	Support	Maintenance	Fellowships	E & G	Auxiliary	Total
Salaries											
Admini/Professional	549,474	4,560	11,065	1,262,860	697,930	2,396,640	110,300	0	5,032,829	54,000	5,086,829
Academic	32,405,001	228,292	319,780	2,884,543	167,816	35,892	0	0	36,041,324	0	36,041,324
Supporting	2,338,199	116,429	173,540	1,696,076	1,680,957	3,210,805	4,185,852	0	13,401,858	438,759	13,840,617
Students	345,117	1,935	3,432	134,924	113,704	74,099	30,083	0	703,294	238,085	941,379
Professional	1,478,313	122,738	327,518	1,528,489	3,778,644	3,911,551	684,020	0	11,831,273	434,888	12,266,161
Total Salaries	37,116,104	473,954	835,335	7,506,892	6,439,051	9,628,987	5,010,255	0	67,010,578	1,165,732	68,176,310
Employee Benefits											
FICA	2,547,791	28,031	58,550	493,881	433,807	665,051	361,651	0	4,588,762	61,329	4,650,091
Retirement	3,317,153	34,120	79,393	634,588	606,594	991,661	545,997	0	6,209,506	77,483	6,286,989
Insurance	4,013,189	54,790	125,871	999,060	957,092	1,555,126	1,382,315	0	9,087,443	133,878	9,221,321
Unemployment	32,257	376	802	5,927	5,769	9,105	4,288	0	58,524	818	59,342
Other	482,550	-8,385	17,393	172,962	154,957	261,607	122,126	0	1,203,210	37,911	1,241,121
Total Benefits	10,392,940	108,932	282,009	2,306,418	2,158,219	3,482,550	2,416,377	0	21,147,445	311,419	21,458,864
Total Personal	47,509,044	582,886	1,117,344	9,813,310	8,597,270	13,111,537	7,426,632	0	88,158,023	1,477,151	89,635,174
Other											
Travel	660,907	222,640	18,888	100,433	870,697	-22,253	23,192	0	1,874,504	29,632	1,904,136
Printing, Duplicating	291,263	33,963	9,786	84,669	330,375	-274,527	7,741	0	483,270	20,613	503,883
Processing											
Utilities & Fuel	15,390	95	0	0	0	0	3,798,217	0	3,813,702	279,483	4,093,185
Communications	292,343	17,299	11,201	87,240	203,237	-767,020	14,543	10	-141,147	597,490	456,343
Cost											
Maintenance/Repairs	303,193	3,526	866	15,054	82,628	212,412	226,340	0	844,019	32,968	876,987
Professional/Admin.	1,190,733	148,588	49,200	196,881	537,368	1,983,945	1,025,349	1,900	5,133,964	271,403	5,405,367
Services											
Supplies	2,670,052	324,648	248,954	723,982	815,128	872,736	1,103,840	22	6,759,362	180,676	6,940,038
Rental & Insurance	177,685	2,080	47,373	53,467	89,796	142,482	439,751	0	952,634	210	952,844
Motor Vehicle Operation	0	0	0	0	0	77,162	88,363	0	165,525	0	165,525
Awards & Idemnities	6,350	5,500	0	500	38,484	73,844	0	0	124,678	0	124,678
Grants & Subsidies	13,076	11,000	0	0	2,610	6	0	0	26,692	0	26,692
Other Services & Expens	5,237	277	699	52	35,683	315,309	220	0	357,477	-14,596	342,881
Equipment	546,618	139,395	0	0	51,655	87,206	39,155	0	864,029	0	864,029
Dept Revenue	1,873,927	26,158	278,139	700,102	530,355	-5,096,938	-2,816,124	0	-4,504,381	2,446,458	-2,057,923
Charges											
Library Holdings	259	12,255	0	597,078	0	0	-4,305	0	605,287	0	605,287
Scholarships	4,142,048	18,044	17,139	848,881	2,270,614	207,585	7,403	4,782,014	12,293,728	220,130	12,513,858
Total Other	12,189,081	965,468	682,245	3,408,339	5,858,630	-2,188,051	3,953,685	4,783,946	29,653,343	4,064,467	33,717,810
Total E & G	59,698,125	1,548,35	1,799,589	13,221,649	14,455,900	10,923,486	11,380,317	4,783,946	117,811,366	5,541,618	123,352,984
Transfers & Dept	0	0	0	0	0	0	0	0	7,046,825	4,311,605	11,358,430
Grand Total	59,698,125	1,548,354	1,799,589	13,221,649	14,455,900	10,923,486	11,380,317	4,783,946	124,858,191	9,853,223	134,711,414

Appendix C

Community College Performance Outcomes 2011-12 through 2013-14

FY 2015-2016 Outcomes Funding Formula Data Community Colleges												
Academic Year	12 Credit Hours	24 Credit Hours	36 Credit Hours	Dual Enrollment	Associate's	1-2 Yr. Certificate	Less Than 1 Yr. Certificate	Job Placements	R&D Success	Transfers Out	Contact Hours	Awards per 100 FTE
Chattanooga												
2013-14	2,339	1,708	1,446	1,373	1,046	179	110	609	2,402	499	133,554	18.86
2012-13	2,318	1,801	1,591	1,253	1,002	229	194	558	2,875	568	149,621	17.83
2011-12	2,351	1,872	1,646	1,155	896	146	105	429	2,849	531	241,977	14.72
Cleveland												
2013-14	987	752	627	945	447	27	181	161	950	195	10,132	19.37
2012-13	1,060	716	605	615	372	29	153	190	1,023	209	7,596	15.89
2011-12	1,164	817	659	627	370	49	166	216	944	236	4,014	15.74
Columbia												
2013-14	1,489	1,202	1,037	959	626	51	0	209	1,144	391	60,894	19.51
2012-13	1,538	1,284	1,012	843	599	52	*	212	1,553	415	63,095	18.71
2011-12	1,558	1,304	1,050	791	611	47	*	234	1,465	449	54,072	18.19
Dyersburg												
2013-14	834	539	459	1,025	326	33	15	133	1,154	209	18,945	19.01
2012-13	959	625	542	887	300	26	17	121	1,199	243	7,114	14.70
2011-12	1,039	780	542	803	280	32	11	101	1,157	218	6,027	13.34
Jackson												
2013-14	1,179	763	721	1,324	470	37	72	240	1,192	341	20,571	18.02
2012-13	1,127	899	691	800	509	34	41	357	1,435	299	17,853	18.23
2011-12	1,194	921	782	815	554	34	25	284	1,408	280	14,019	17.38
Motlow												
2013-14	1,495	1,104	854	1,061	602	0	55	78	1,178	456	3,289	19.73
2012-13	1,363	1,044	901	859	568	*	22	73	1,620	499	5,493	18.70
2011-12	1,410	1,133	962	854	627	0	45	105	1,692	540	8,803	19.12
Nashville												
2013-14	2,438	1,853	1,510	1,126	646	95	298	258	2,515	617	35,107	11.56
2012-13	2,338	1,824	1,611	1,119	624	99	233	335	3,152	640	35,965	11.21
2011-12	2,305	1,937	1,717	997	718	113	117	263	3,024	675	39,563	12.66
Northeast												
2013-14	1,475	1,200	1,126	791	781	139	34	569	1,743	397	9,778	22.82
2012-13	1,664	1,348	1,125	723	720	104	25	275	2,129	380	6,434	18.36
2011-12	1,485	1,326	1,217	585	764	110	10	261	1,855	404	6,558	18.65
Pellissippi												
2013-14	2,798	2,316	1,870	1,577	1,286	0	873	366	2,306	861	48,273	17.67
2012-13	2,823	2,346	1,947	1,213	1,258	0	1,152	310	3,140	850	45,598	16.90
2011-12	3,001	2,350	2,012	1,525	1,101	0	190	395	2,760	736	46,118	13.97
Roane												
2013-14	1,509	1,248	1,054	1,691	798	99	7	360	1,297	394	102,286	22.27
2012-13	1,642	1,256	1,111	1,632	787	77	9	391	1,767	451	116,535	20.24
2011-12	1,687	1,269	1,107	1,655	804	91	22	427	1,650	486	82,250	19.99
Southwest												
2013-14	3,289	2,430	1,700	582	839	32	311	393	4,201	728	84,906	12.10
2012-13	2,976	2,446	1,911	407	897	63	344	487	4,756	773	75,009	11.90
2011-12	3,898	3,072	2,360	409	808	49	305	366	4,687	778	74,172	9.03
Volunteer												
2013-14	2,037	1,467	1,329	1,961	766	79	333	403	1,562	569	95,794	16.08
2012-13	2,037	1,597	1,365	1,792	787	73	399	448	2,426	595	74,639	16.00
2011-12	2,132	1,684	1,446	1,566	763	88	205	387	2,329	627	95,564	14.66
Walters												
2013-14	1,779	1,260	1,095	1,612	868	28	222	507	1,567	459	66,428	21.82
2012-13	1,927	1,311	1,112	1,407	838	14	226	544	1,846	393	194,026	19.37
2011-12	1,976	1,393	1,173	1,261	791	18	265	501	1,817	479	197,866	17.36

Source: THEC Fiscal Affairs

Notes: Data reflect individual year outcomes, not three-year averages. In some instances, the Funding Formula uses slightly different data definitions than other tables included in the Fact Book.

Appendix D

Community College Performance Outcomes 2008-09 through 2010-11

FY 2012-2013 Outcomes Funding Formula Data Community Colleges												
Academic Year	12 Credit Hours	24 Credit Hours	36 Credit Hours	Dual Enrollment	Associate's	1-2 Yr. Certificate	Less Than 1 Yr. Certificate	Job Placements	R&D Success	Transfers Out	Contact Hours	Awards per 100 FTE
Chattanooga												
2010-11	4,041	2,830	2,207	1,095	823	121	198	429	2,528	512	163,770	13.12
2009-10	4,093	2,708	2,179	1,003	728	101	90	381	2,086	467	97,351	12.94
2008-09	3,950	2,348	1,806	1,060	634	101	14	407	2,171	442	41,149	12.91
Cleveland												
2010-11	1,557	1,156	935	626	346	38	169	200	927	240	7,276	14.25
2009-10	1,918	1,140	843	582	326	23	168	124	753	236	3,582	13.46
2008-09	1,598	944	758	527	293	6	59	135	759	195	379	12.99
Columbia												
2010-11	2,086	1,705	1,317	674	522	50	*	240	1,396	463	67,122	15.03
2009-10	2,467	1,718	1,351	735	527	61	0	218	1,123	435	71,585	15.82
2008-09	1,979	1,470	1,176	649	489	68	*	158	1,182	464	44,440	17.16
Dyersburg												
2010-11	1,574	969	656	765	255	15	23	98	1,014	219	5,909	11.08
2009-10	1,912	1,120	672	599	210	0	12	72	719	260	5,938	9.19
2008-09	1,395	789	555	551	220	0	15	77	823	228	6,373	12.15
Jackson												
2010-11	1,887	1,354	1,109	971	499	0	27	279	1,346	323	17,182	13.73
2009-10	2,664	1,387	1,059	837	546	13	31	289	1,063	334	21,008	15.51
2008-09	2,134	1,183	968	666	465	20	24	246	1,109	312	2,704	15.36
Motlow												
2010-11	1,948	1,459	1,160	787	504	0	57	70	1,645	568	5,513	14.65
2009-10	2,467	1,693	1,279	686	535	0	60	72	1,231	497	12,078	15.25
2008-09	2,241	1,407	1,073	585	459	0	*	74	1,156	477	1,990	14.99
Nashville												
2010-11	3,389	2,748	2,076	1,092	515	36	140	263	2,852	658	32,948	8.64
2009-10	3,984	2,814	2,076	926	484	37	114	258	1,593	667	67,613	8.73
2008-09	3,293	2,150	1,733	790	523	71	46	268	2,267	585	48,134	11.93
Northeast												
2010-11	2,661	2,073	1,628	566	653	115	30	249	1,703	411	5,556	15.54
2009-10	2,853	2,049	1,570	487	678	179	15	163	905	387	4,717	19.00
2008-09	2,425	1,759	1,304	402	651	132	42	248	1,429	317	6,011	20.17
Pellissippi												
2010-11	4,031	3,223	2,575	1,245	832	0	498	189	2,280	652	62,867	10.74
2009-10	5,166	3,081	2,351	1,164	776	0	9	156	1,913	828	34,325	10.81
2008-09	4,382	2,753	2,028	829	694	0	*	190	1,806	784	19,668	11.16
Roane												
2010-11	2,411	1,867	1,424	1,372	720	59	71	427	1,528	476	94,910	16.86
2009-10	2,869	1,790	1,335	1,023	678	29	67	360	1,257	498	49,275	16.01
2008-09	2,273	1,562	1,286	816	616	9	66	375	1,231	491	47,022	16.10
Southwest												
2010-11	5,900	4,289	2,990	367	716	59	340	422	4,687	774	53,211	8.10
2009-10	7,543	4,868	3,175	421	693	54	393	393	3,777	737	45,457	7.94
2008-09	6,260	4,066	2,769	267	642	40	349	435	4,247	706	57,015	8.37
Volunteer												
2010-11	3,328	2,348	1,878	1,519	645	70	192	278	2,290	623	71,174	11.69
2009-10	4,561	2,506	1,748	1,351	667	83	360	392	1,437	645	98,468	12.69
2008-09	3,606	2,015	1,502	1,334	600	65	215	335	1,927	575	56,858	13.43
Walters												
2010-11	2,615	1,906	1,612	1,011	681	16	264	501	1,766	483	129,099	14.03
2009-10	3,240	2,092	1,567	924	685	16	294	507	1,376	468	88,322	14.24
2008-09	2,728	1,828	1,496	801	616	*	302	467	1,392	418	93,412	14.34

Source: THEC Fiscal Affairs

Notes: Data reflect individual year outcomes, not three-year averages. In some instances, the Funding Formula uses slightly different data definitions than other tables included in the Fact Book.

Appendix E

University Performance Outcomes 2011-12 through 2013-14

FY 2015-16 Outcomes Funding Formula Data Universities										
Academic Year	24 Credit Hours	48 Credit Hours	72 Credit Hours	Bachelor's & Associate's	Master's & Ed Spec	Doctoral & Law	Research & Service	Transfers Out	Degrees per 100 FTE	Graduation Rate
UTM										
2013-14	1,124	1,134	1,171	1,223	104	0	$2,233,932	254	18.95	0.57
2012-13	1,217	1,155	1,203	1,247	122	0	$2,001,804	265	18.52	0.57
2011-12	1,261	1,163	1,206	1,116	132	0	$3,036,994	260	16.33	0.59
APSU										
2013-14	1,533	1,384	1,451	1,804	316	0	$2,393,772	227	21.87	0.47
2012-13	1,463	1,476	1,466	1,725	304	0	$2,614,188	221	20.46	0.44
2011-12	1,502	1,433	1,386	1,553	326	0	$3,601,246	227	18.26	0.47
TTU										
2013-14	1,989	1,721	1,790	1,804	352	23	$8,348,063	360	19.39	0.59
2012-13	1,830	1,562	1,605	1,830	376	12	$8,873,329	348	20.22	0.60
2011-12	1,645	1,545	1,728	1,696	444	18	$9,586,009	355	19.02	0.58
UTC										
2013-14	1,938	1,699	1,759	1,756	433	70	$9,186,021	642	18.68	0.53
2012-13	2,067	1,581	1,633	1,638	446	68	$10,409,340	615	17.94	0.53
2011-12	1,721	1,519	1,634	1,514	490	54	$11,444,947	573	16.91	0.54
MTSU										
2013-14	2,931	2,866	3,563	4,012	861	32	$11,740,917	542	21.69	0.52
2012-13	2,799	3,211	3,734	4,159	1,010	23	$13,498,343	684	21.18	0.55
2011-12	3,297	3,458	3,804	3,911	925	20	$30,655,961	726	18.87	0.54
ETSU										
2013-14	1,580	1,644	1,870	2,321	647	114	$20,608,903	353	22.01	0.53
2012-13	1,764	1,709	1,879	2,314	576	86	$22,836,711	419	21.05	0.52
2011-12	1,823	1,716	2,040	2,146	609	83	$23,159,718	391	18.92	0.52
TSU										
2013-14	1,124	882	897	916	486	85	$33,195,422	191	15.21	0.40
2012-13	994	839	915	1,066	417	66	$31,582,168	235	18.05	0.40
2011-12	976	901	892	1,098	434	72	$31,029,229	228	17.59	0.43
UM										
2013-14	2,054	2,313	2,672	2,991	1,071	260	$57,944,475	410	21.07	0.48
2012-13	2,135	2,394	2,625	2,887	1,064	259	$51,992,967	494	19.57	0.51
2011-12	2,324	2,321	2,491	2,724	1,009	271	$55,561,194	521	17.94	0.47
UTK										
2013-14	3,345	4,020	4,317	4,372	1,579	549	$145,602,228	569	22.35	0.78
2012-13	3,331	3,864	4,187	4,407	1,607	565	$154,378,165	615	22.77	0.77
2011-12	3,264	3,844	4,020	4,539	1,583	571	$149,350,434	601	23.38	0.76

Source: THEC Fiscal Affairs

Notes: Data reflect individual year outcomes, not three-year averages.

In some instances, the Funding Formula uses slightly different data definitions than other tables included in the Fact Book. The data, formula definitions, and other information can be found on THEC's website: www.tn.gov/thec.

Appendix F

University Performance Outcomes 2008-09 through 2010-11

FY 2012-2013 Outcomes Funding Formula Data Universities										
Academic Year	24 Credit Hours	48 Credit Hours	72 Credit Hours	Bachelor's & Associate's	Master's & Ed Spec	Doctoral & Law	Research & Service	Transfers Out	Degrees per 100 FTE	Graduation Rate
UTM										
2010-11	1,410	1,371	1,370	1,038	131	-	$3,646,780	258	15.14	0.59
2009-10	1,591	1,428	1,267	1,017	129	-	$4,311,202	290	15.28	0.54
2008-09	1,595	1,269	1,239	1,018	115	-	$4,386,318	271	16.26	0.55
APSU										
2010-11	2,127	1,756	1,622	1,377	259	-	$3,489,372	223	16.92	0.42
2009-10	1,895	1,617	1,472	1,269	266	-	$3,604,390	217	16.64	0.39
2008-09	1,797	1,572	1,478	1,336	258	-	$2,895,210	194	18.35	0.39
TTU										
2010-11	1,912	1,807	1,794	1,594	637	20	$10,396,768	327	18.67	0.56
2009-10	1,949	1,614	1,749	1,529	625	19	$11,039,731	386	18.93	0.55
2008-09	1,725	1,592	1,656	1,521	799	18	$10,266,020	323	19.99	0.59
UTC										
2010-11	2,604	2,096	1,952	1,320	432	60	$10,350,479	522	15.43	0.51
2009-10	2,289	1,702	1,614	1,275	427	52	$10,899,109	466	15.27	0.49
2008-09	2,044	1,540	1,532	1,256	404	50	$9,277,657	478	16.26	0.55
MTSU										
2010-11	4,334	4,196	4,630	3,798	899	19	$28,349,988	653	18.05	0.51
2009-10	4,183	4,218	4,438	3,605	826	20	$27,539,106	816	15.27	0.49
2008-09	4,116	4,022	4,138	3,773	780	24	$29,049,938	750	19.52	0.55
ETSU										
2010-11	2,301	2,057	2,297	2,002	622	79	$24,557,840	446	18.07	0.50
2009-10	2,249	2,100	2,142	1,874	641	55	$22,883,114	436	17.70	0.46
2008-09	2,200	1,947	1,998	1,887	582	74	$21,215,713	401	18.83	0.49
TSU										
2010-11	1,385	1,114	1,105	994	334	65	$37,896,254	268	16.32	0.37
2009-10	1,437	1,060	1,058	1,128	386	72	$27,508,382	300	18.60	0.37
2008-09	1,245	1,086	1,178	1,035	420	66	$26,360,601	230	17.79	0.46
UM										
2010-11	2,949	2,882	3,172	2,634	995	255	$65,247,384	358	17.82	0.44
2009-10	2,831	2,721	3,133	2,556	805	253	$68,999,975	450	18.16	0.40
2008-09	2,779	2,775	2,878	2,586	874	253	$58,424,588	455	19.03	0.44
UTK										
2010-11	4,449	4,191	4,524	4,332	1,515	481	$151,215,597	609	21.94	0.70
2009-10	3,644	4,590	4,992	4,108	1,573	492	$132,545,116	896	20.25	0.67
2008-09	4,358	4,809	4,685	4,107	1,645	477	$141,229,902	817	19.83	0.66

Source: THEC Fiscal Affairs

Notes: Data reflect individual year outcomes, not three-year averages. In some instances, the Funding Formula uses slightly different data definitions than other tables included in the Fact Book.

Appendix G

FTE Enrollment 2008-2013

Public FTE Enrollment Fall Terms 2003 and 2008 - 2013							
Institution	**2003**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
TBR Community Colleges							
Chattanooga State Community College	5,186	5,334	5,987	6,812	6,801	6,585	6,388
Cleveland State Community College	2,224	2,195	2,504	2,609	2,630	2,482	2,487
Columbia State Community College	3,082	3,081	3,569	3,701	3,495	3,348	3,352
Dyersburg State Community College	1,819	1,741	2,213	2,421	2,339	2,217	1,918
Jackson State Community College	2,743	2,803	3,313	3,415	3,262	2,847	2,722
Motlow State Community College	2,436	2,892	3,353	3,375	3,112	2,925	2,984
Nashville State Community College	3,769	4,315	5,154	5,621	5,702	5,681	5,796
Northeast State Community College	3,112	3,606	4,231	4,680	4,437	4,289	3,912
Pellissippi State Community College	5,013	5,686	6,695	7,346	7,509	7,057	6,978
Roane State Community College	3,775	3,766	4,227	4,511	4,361	4,153	3,964
Southwest Tennessee Community College	7,361	7,219	8,465	8,533	8,276	7,555	6,801
Volunteer State Community College	4,426	4,582	5,501	5,817	5,509	5,091	4,985
Walters State Community College	4,067	4,082	4,780	4,819	4,598	4,425	4,103
TBR Community College Total	**49,013**	**51,302**	**59,993**	**63,658**	**62,031**	**58,656**	**56,392**
TBR Universities							
Austin Peay State University	6,278	7,499	7,566	8,622	8,685	8,508	8,416
East Tennessee State University	9,936	11,448	12,116	12,794	13,030	12,784	12,374
Middle Tennessee State University	18,735	20,062	21,049	22,030	21,840	20,824	19,637
Tennessee State University	7,716	6,694	7,025	7,157	7,166	6,901	7,080
Tennessee Technological University	7,509	8,568	9,057	9,368	9,527	9,636	9,797
University of Memphis	15,720	15,910	16,792	17,798	17,974	17,462	16,704
TBR University Total	**65,894**	**70,181**	**73,605**	**77,769**	**78,222**	**76,114**	**74,007**
UT Universities							
University of Tennessee, Chattanooga	7,138	8,446	9,116	9,788	9,845	9,951	10,208
University of Tennessee, Knoxville	22,730	25,097	24,624	24,219	23,519	23,610	23,860
University of Tennessee, Martin	5,265	6,305	6,714	6,959	6,852	6,770	6,555
University of Tennessee, Medical Health Sci Center	2,008	2,671	2,837	2,623	2,789	2,799	2,859
University of Tennessee Total	**37,141**	**42,519**	**43,291**	**43,589**	**43,005**	**43,129**	**43,481**
University Total	**103,035**	**112,700**	**116,896**	**121,358**	**121,227**	**119,243**	**117,489**
Grand Total	**152,048**	**164,002**	**176,889**	**185,016**	**183,258**	**177,899**	**173,880**

Source: THEC SIS

Notes: East Tennessee State University includes the Medical and Pharmacy schools.

The University of Tennessee, Knoxville includes the Veterinary School and the UT Space Institute.

UT Health Science Center, UT Veterinary School, ETSU College of Medicine and College of Pharmacy FTE are equivalent to headcount.

Enrollments are for credit-bearing courses only. Based on end of term data.

*FTE for 2010 and 2011 were updated September 2, 2014.

Appendix H

FTE Enrollment 2006-2011

Public FTE Enrollment Fall Terms 2001 and 2006 - 2011							
Institution	**2001**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
TBR Community Colleges							
Chattanooga State Community College	5,269	5,054	5,044	5,334	5,987	6,712	6,671
Cleveland State Community College	2,318	2,034	2,022	2,195	2,504	2,592	2,617
Columbia State Community College	2,984	2,963	3,003	3,081	3,569	3,579	3,417
Dyersburg State Community College	1,577	1,693	1,668	1,741	2,213	2,419	2,334
Jackson State Community College	2,658	2,791	2,953	2,803	3,313	3,410	3,260
Motlow State Community College	2,441	2,566	2,739	2,892	3,353	3,337	3,069
Nashville State Community College	3,631	4,083	4,063	4,315	5,154	5,619	5,686
Northeast State Community College	2,879	3,374	3,387	3,606	4,231	4,624	4,423
Pellissippi State Community College	5,151	5,149	5,446	5,686	6,695	7,274	7,402
Roane State Community College	3,647	3,738	3,764	3,766	4,227	4,389	4,205
Southwest Tennessee Community College	7,743	7,306	6,794	7,219	8,465	8,431	8,216
Volunteer State Community College	4,295	4,677	4,427	4,582	5,501	5,777	5,449
Walters State Community College	3,909	3,872	3,884	4,082	4,780	4,808	4,595
TBR Community College Total	**48,503**	**49,300**	**49,194**	**51,302**	**59,993**	**62,973**	**61,343**
TBR Universities							
Austin Peay State University	5,769	7,443	7,139	7,499	7,566	8,493	8,513
East Tennessee State University	9,507	10,594	11,224	11,696	12,278	13,450	13,725
Middle Tennessee State University	17,125	19,355	19,525	20,062	21,049	22,010	21,807
Tennessee State University	7,425	7,464	7,465	6,694	7,025	7,142	7,159
Tennessee Technological University	7,372	7,900	8,312	8,568	9,057	9,361	9,525
University of Memphis	15,890	15,946	15,747	15,910	16,792	17,536	17,725
TBR University Total	**63,087**	**68,702**	**69,412**	**70,429**	**73,767**	**77,992**	**78,453**
UT Universities							
University of Tennessee, Chattanooga	6,955	7,564	8,168	8,446	9,116	9,788	9,845
University of Tennessee, Knoxville	23,183	24,016	24,673	25,230	24,786	24,403	23,633
University of Tennessee, Martin	5,379	5,968	6,108	6,305	6,714	6,959	6,852
University of Tennessee, Medical Health Sci Center	1,950	2,505	2,733	2,778	2,914	2,936	3,135
University of Tennessee Total	**37,467**	**40,053**	**41,682**	**42,759**	**43,530**	**44,086**	**43,465**
University Total	**100,553**	**108,755**	**111,094**	**113,188**	**117,297**	**122,078**	**121,918**
Grand Total	**149,056**	**158,055**	**160,288**	**164,490**	**177,290**	**185,051**	**183,261**

Source: THEC SIS

Notes: East Tennessee State University includes the Medical and Pharmacy schools.

The University of Tennessee, Knoxville includes the Veterinary school and the UT Space Institute.

Enrollments are for credit-bearing courses only. Based on end of term data.

UT Health Science Center FTE is defined in the Glossary on page 102.

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Appendix I

Exception Letter from ETSU Institutional Review Board

EAST TENNESSEE STATE UNIVERSITY

Office for the Protection of Human Research Subjects • Box 70565 • Johnson City, Tennessee 37614-1707
Phone: (423) 439-6053 Fax: (423) 439-6060

August 6, 2015

Dear Dearl Lampley,

Thank you for recently submitting information regarding your proposed project "Institutional Budget Function Allocations as Predictors of Performance Outcomes of Tennessee Public Community Colleges and Universities".

I have reviewed the information, which includes a completed Form 129.

The determination is that this proposed activity as described meets neither the FDA nor the DHHS definition of research involving human subjects. Therefore, it does not fall under the purview of the ETSU IRB.

IRB review and approval by East Tennessee State University is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are human subject research in which the organization is engaged, please submit a new request to the IRB for a determination.

Thank you for your commitment to excellence.

Sincerely,
Stacey L. Williams, Ph.D.
Chair, ETSU IRB

Full AAHRPP Accreditation

Accredited Since December 2005

VITA

DEARL DOUGLAS LAMPLEY

Education:	Public Schools, Fairview, Tennessee B.S. Agriculture, University of Tennessee, Knoxville, Tennessee 1979 M.S. Agriculture, University of Tennessee, Knoxville, Tennessee 1981 Ed.D. Educational Leadership, East Tennessee State University 2015
Professional Experience:	Dean of Science Technology and Math, Columbia State Community College 2010-2015 Associate Professor of Agriculture, Columbia State Community College 1998-2015
Presentations:	"Agriculture in Tennessee Community Colleges" presented at 2004 Tennessee University Agriculture Instructors Conference "Cryptosporidium Outbreak in Columbia State Veterinarian Technology Students" presented at 2002 Symposium of Communicable Diseases. Atlanta, GA
Professional memberships:	Association of Technology, Management, and Applied Engineering Nashville Technology Council Tennessee Academy of Science