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An Exploration of the Influence of Dimensions of Organizational Behavior on the Relationship between the Allocation of Financial Resources and Persistence and Graduation Rates

Bryant Morgan

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AN EXPLORATION OF THE INFLUENCE OF DIMENSIONS OF
ORGANIZATIONAL BEHAVIOR ON THE RELATIONSHIP BETWEEN THE
ALLOCATION OF FINANCIAL RESOURCES AND PERSISTENCE AND
GRADUATION RATES

A Dissertation Presented

by

BRYANT T. MORGAN

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

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College of Education
Department of Educational Policy, Research, and Administration
Educational Policy and Leadership – Higher Education

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DEDICATION

To Toots, who long has been, and forever will be, the basis for the twinkle in my eye and the beating of my heart, the source of my encouragement and joy, and my grounding in reality interspersed with periodic flights of fancy.

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ABSTRACT

AN EXPLORATION OF THE INFLUENCE OF DIMENSIONS OF ORGANIZATIONAL BEHAVIOR ON THE RELATIONSHIP BETWEEN THE ALLOCATION OF FINANCIAL RESOURCES AND PERSISTENCE AND GRADUATION RATES

MAY 2019

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This study was prompted by the limited body of research describing the relationship between the allocation of financial resources and student outcomes in higher education, and by the instance of contradictory and inconclusive results found in that research. With consideration that yet unidentified dynamics might account for the diversity of results, this study explored the influence of dimensions of organizational behavior on the allocation of financial resources at three colleges with differing rates of persistence and graduation rates, but that were otherwise similar in terms of other defining institutional characteristics. Q Methodology ascertained perceptions of senior leadership at the three colleges about the behavioral nature of financial decision making at those institutions. Factor analysis of those perceptions revealed distinctly different profiles for two of the institutions in terms of dimensions of organizational behavior.

Factor analysis found a lesser degree of commonality in perceptions about financial resource allocation at the third institution. The results implied that dimensions of organizational behavior differentially influence the allocation of financial resources. Implications for the relationship of financial resource allocation and persistence and graduation rates are discussed, and areas for future research recommended.

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CHAPTER 1

INTRODUCTION

Introduction to the Problem

On August 14, 2008, President Barack Obama signed into law the Higher Education Opportunity Act (HEOA), a reauthorization of the Higher Education Act of 1965 (HEA). During the 43 years prior to the signing of the legislation, the HEA was updated and reauthorized seven times (Council for Opportunity in Higher Education, 2003); but the 2008 enactment of the HEOA was the first reauthorization of the legislation in a decade. Earlier reauthorization of the act was delayed by debate surrounding a call for a major overhaul of the HEA (Field, 2007).

In response to that earlier debate, Margaret Spellings, then U. S. Secretary of Education empaneled the Commission on the Future of Higher Education to examine the state of higher education and develop recommendations for change. The Commission focused on accessibility, affordability and accountability in higher education (Commission, 2006). Citing the work of the Commission, Secretary Spellings suggested that “. . . higher education has become . . . at times self-satisfied and unduly expensive” (p. ix). Her comments brought further attention to the issue of the cost of higher education.

That observation corresponds with the suggestions of others that, over the past twenty years, students and their families have increasingly borne a growing burden for the cost of postsecondary education (Heller, & Rogers, 2006; Storberg-Walker & Torraco, 2004; Ehrenberg and Rizzo, 2004). More critically, in his landmark

examination of returns on investment in learning, Bowen (1997) referenced (but did not endorse) the perception of others that the cost of higher education is not appropriately justified by its outcomes. In concert with these descriptions of higher education, Ryan (2004) observes that it is incumbent upon colleges and universities to respond to demands for increased accountability.

The foregoing served as the context and stimulus for this study. As an introductory statement of the problem, with further elaboration to follow, the growing expectation for higher education to contain costs and to be more accountable for outcomes illuminated a dearth of understanding regarding the relationship between the allocation of financial resources and the outcomes of higher education. In addition, studies of the linkage between the deployment of financial resources in higher education and consequent outcomes are few, differ in terms of the outcomes measured, and yield conflicting results.

Three broad areas of focus are found in study of the use of financial resources in higher education: (a) the impact of financial resources on general institutional performance defined in such terms as organizational efficiency or institutional prestige, (b) the relationship between the allocation of financial resources on student-related factors such as satisfaction, engagement and intellectual growth, and (c) the correspondence of the allocation of financial resources with rates of graduation and student persistence. Following is an illustrative, non-exhaustive selection of examples from each area of study depicting the contradictory nature of results.

In studies of the relationship between institutional expenditures and measures of overall institutional performance, Thompson & Riggs (2000) find that institutional

performance correlates significantly with expenditures for instruction and academic support, but Hayek (2001) concludes that any observable relationship between institutional expenditures and performance is not statistically significant. Belfield & Thomas (2000) report inconclusive results.

Similar inconsistencies are found examining the effect of financial allocations on student-related factors, in this example, student engagement. Assessing the impact of the deployment of financial resources on student engagement, Ryan (2005) observes no correlation between student engagement and student-related expenditure categories. Rather, he finds that the only significant relationship is a negative correlation between student engagement and expenditures for institutional support. In contrast, Pike, Smart, Kuh & Hayek (2006) conclude that levels of student engagement vary independently of the magnitude of any types of institutional expenditures.

With respect to the third area of research that related to student persistence and graduation rates, several studies show that graduation rates and rates of persistence correlate often, but not universally or consistently, with expenditures for instruction (Astin, 1993a, 1993b; Gansemer-Topf & Schuh, 2006; Hamrick, Schuh & Shelly, 2004; and Ryan, 2004). Other research, however, suggests that different types of institutional expenditures influence rates for graduation and persistence. Those include expenditures for sponsored research (Kim, Rhoades and Woodward, 2003), academic support (Ryan, 2004), the library (Hamrick, Schuh & Shelly, 2004), institutional support (Fowles, 2008) and student services (Astin, 1993a, 1993b). Confounding further the development of a consistent model of the relationship between institutional expenditures and either graduation rates or persistence, Gansemer-Topf, Saunders, Schuh & Shelly (2004)

conclude that no significant difference exists between institutions with high graduation rates and those with low graduation rates in terms of financial-related institutional characteristics.

The inconsistencies and contradictions in these studies emphasize the need to better understand the correlation between the allocation of financial resources and student outcomes. One possible explanation for the differing results, implied by Kuh and Ikenberry (2009), is that assessment data are not used, or used regularly, to inform the resource-allocation decision. If indeed the case, a lack of correspondence between the allocation of financial resources and institutional outcomes should not come as a surprise. Extant literature on the relationship between the allocation of financial resources and student outcomes is mute on the question of whether outcome measures served as any basis for the resource-allocation decision at institutions in the studies.

The basis for the inconsistencies found in this area of study may be more complicated than whether institutions employ outcome data to guide the resource-allocation decision. The inconsistent findings may arise from a complex interrelationship between the allocation of institutional resources and the outcomes derived from the institutional programs supported by those resources. Further, even among institutions that allocate resources on the basis of desired outcomes, a mediating influence such as institutional culture, or the manner with which the allocation decision is made or with which the decision implemented, may affect the linkage between the allocation of financial resources and consequent outcomes.

Purpose of the Study

The purpose of this study is to contribute to a better understanding of the relationship between the deployment of financial resources in colleges and universities and student outcomes. This study is distinct from other known research on the influence of the allocation of financial resources by examining whether institutions that differ in terms of student persistence and graduate rates, but are otherwise similar, can be differentiated on the basis of dimensions of organizational behavior that characterize financial decision making.

The predominant body of research on the allocation of financial resources and student outcomes is premised on a direct linkage between resource allocation and student outcomes. The present study assumes the unique stance of questioning whether that relationship is more complex and indirect. It builds upon foundational work describing organizational behavior and its relationship to student outcomes (e.g., Berger, 2002, Berger & Milem, 2000, Reason, 2009, Smart, Kuh & Tierney, 1997, Terenzini & Reason, 2005) to explore the extent to which dimensions of organizational behavior influenced the manner of financial resource allocation. The fundamental notion of this study is that the inconsistent and contradictory results in earlier studies arises from differences among institutions in terms of characteristics of organizational behavior that were neither recognized nor controlled in the course of those studies. Specifically, expanding on studies of influence of organizational behavior on student outcomes, as exemplified by the work of Berger (2000, 2001-2002), Berger and Milem, (2000), Terenzini and Reason (2005), this study examined the extent to which dimensions of organizational behavior

influence the manner with which financial decision-making occurs and the extent to which differences among institutions in terms of student persistence and graduation rates correspond with the differing dimensions of organizational behavior.

Research Questions

The following research questions guided the exploration of the influence of dimensions of organizational behavior on the allocation of financial resources and the relationship between those dimensions of organizational behavior and student persistence and graduation rates:

1. To what extent do members of the senior leadership within an institution share common perspective on the dimensions of organizational behavior related to the decision-making processes used to allocate financial resources?
2. How do dimensions of organizational behavior influence the manner with which members of the senior leadership make decisions regarding the allocation of financial resources?
3. To what extent are variations in rates of persistence and graduation rates among institutions that are otherwise similar in terms of data reported to IPEDS and other commonly observed characteristics associated with discernable differences among the institutions in terms of dimensions of organizational behavior related to financial decision making?

Significance of the Study

This study sought to establish a relationship among three predominant, but distinctly independent, bodies of knowledge regarding postsecondary education. The first area of knowledge is that describing student retention and persistence in higher education. The second pertains to the economics of higher education, including the cost and funding of higher education, the financial characteristics and the fiscal operation of colleges and universities, and the financial benefits derived by students and society from postsecondary education. The third is the nature of organizational behavior within institutions. To date, scholarly inquiry within one area has typically neglected direct contemplation of the others.

As illustration of this segregation of research focus, beginning with student persistence, an extensive body of literature describes student persistence and retention from a variety of conceptual perspectives, with little mention of financial considerations. Those conceptual perspectives include, for example, how the complex interaction of factors within a social system influences an individual's decision to separate from or remain in that system (Spady, 1971); explaining student attrition and retention on the basis of models of turnover in employment (Bean, 1980); the effect of institutional and personal characteristics on the perceived quality of the educational experience and the consequent influence on persistence (Pace, 1984); the nature of the interaction between students and faculty members as a determinant in student retention (Chickering & Gamson, 1987); the effect of college on students, after disentangling from the explanation of the effect the otherwise naturally occurring student changes (Pascarella & Terenzini,

1991); learning that is more than content-knowledge acquisition and that is based on student interaction with others and the learning environment (Astin, 1993b); the extent of academic and social integration with the institution on the part of students (Tinto, 1975, 1993); the role of active student learning, not just academic integration (Braxton, Milem & Sullivan, 2000); and the influence of the perception of students of aspects of the institution on student engagement (Hu & Kuh, 2002). Quick reference to the standing of the United States in terms of postsecondary education underscores the basis for concern, past and present, regarding student persistence in postsecondary study and rates of graduation. Data summarized by the Organization of Economic Cooperation and Development (OECD, n.d.) show that, as of 2017 (the most recent year for which data were available), the United States ranked 12th worldwide among countries tracked by the OECD in terms of the percentage of 25-34 year olds (47.8%) who had completed a tertiary degree. On average, no more than three-quarters of full-time first-year students return for a second year of study; and approximately 60% of students attain a college degree within six years of their initial entrance in college (Burnette, 2017; Ho Yu, DiGangi, Jannasch-Pennell & Kaprolet, 2010; Martin, 2017).

Cabrera, Nora and Castaneda (1992) hint at a relationship between finance and persistence by noting that financial aid facilitates opportunity for low-income students to afford attendance in higher education and to integrate within the academic and social dimension of the college experience. Similarly, in an elaboration of a “financial nexus” model, Paulsen and St. Paul (2002) posit that the interaction of college costs and the capacity of students to accommodate those costs, influences their enrollment choices and their likelihood of persistence.

Only limited attention is given to the influence of institutional expenditures on persistence to degree attainment (Ryan, 2004). More typically, the study of the economics of higher education and the financing of colleges and universities focuses on matters other than student retention and persistence. Examples of more common areas of emphasis within this realm of study include the contributions of financial equilibrium (i.e., effectively balancing demands for financial resources against sources of income) to the long-term financial vitality of the institution (Massy, 1975); means of financial management in colleges and universities (Hopkins & Massy, 1981); the impact of the uses of financial resources on the wealth of institutions, and the implications of institutional ranking within the financial hierarchy of higher education (Winston, 1994, 1996); explanations of and means for controlling the cost of higher education (Ehrenberg, 2003; Dickeson, 2006); and the economic returns to graduates from obtaining a college degree (Bowen, 1997).

In the realm of organizational studies of higher education, assessing the influence of organizational factors on student persistence has received limited attention as scholars endeavor to understand the diversity of organizational structures, functions and characteristics embodied in colleges and universities. Four decades ago, Cameron (1978) posited that, despite 50 prior years of research on the topic of organizational effectiveness, establishing a common definition of and means for assessing organizational effectiveness within higher education eluded researchers. A decade later Tierney (1988) lamented that “Our lack of understanding about the role of organizational culture in improving management and institutional performance inhibits our ability to address the challenges that face higher education” (p4). Baecker (2011) provides more

recent perspective on the persistent conundrum of understanding colleges and universities in a manner that facilitates change. He observes that the realm of higher education is replete with institutions that are organizationally complicated or unpredictable, but notes that those are, nonetheless, readily recognizable as institutions of higher learning.

By bridging these three important fields of study within higher education, the present study probes the effect of the interplay of financial and organizational factors on student persistence and graduation rates. Further knowledge of the interrelationship among economic and financial factors, organizational characteristics, and student persistence will provide policy makers broader context and better insights for influencing outcomes in higher education. Related, this study will expand the understanding of educators and administrators as they deliberate on means for maximizing the utility of finite resources in fulfilling the central educational missions of their institutions. Ultimately, this study will be of benefit to students to the extent that the results contribute to increases in the number of students who persist in and graduate from their studies in higher education.

Research Design

The association of student outcomes with the interplay of dimensions of organizational behavior and the allocation of financial resources was examined by means of Q Methodology. Data for the study was obtained from three independent liberal arts colleges located in New England. The institutions selected for this study consisted of colleges that were similar in terms of key institutional characteristics, but differed markedly in terms of student persistence and graduation rates. Data informing responses

to the research questions were obtained from multiple sources: (a) one-on-one interviews with senior leadership at each institution, (b) a structured Q-Sort exercise, and (c) pertinent institutional documentation related to student persistence, financial operations, and the organization, as provided by the colleges. Factor analysis of the data acquired from the Q Sort exercise was used to define profiles of organizational behavior for the three institutions. Differences in those profiles, supplemented by perspectives derived from individual interviews, served as the basis for responding to the research questions.

Institutions

While no three institutions likely exist that are similar in every respect, the three colleges represented in this study were all small, not-for-profit, four-year baccalaureate institutions that are primarily or highly residential, and located in city or suburban settings within New England. In addition, data such as those pertaining to the “admissions funnel,” levels of achievement on entrance examinations, proportions of the student body who were full-time, degree seeking students, percentages of Pell-eligible students and Pell grant amounts showed comparability among the institutions in terms of student body. Attention was given to ensuring that no apparent differences exist among the institutions in such a pronounced manner as to suggest that one institution would have uniform advantage over another in terms of retention and graduation rates. A full outline of the selection criteria and descriptions of the institutions that participated in this study may be found in Chapter 3.

Participants

Participants in this study were individual who comprised the “dominant coalition” of institutional leaders at each college. As described by Thompson (1967), the dominant coalition is that group of individuals who determine organizational effectiveness by exercising control over decision-making, the allocation of resources, the establishment of policy, and the setting and pursuit of institutional goals (Cameron, 1978). Consequently, the principal participants in this study will be the president, chief academic officer and chief financial officer as well as other members of the president’s cabinet, and any other key decision-makers as identified by the respective presidents of each college.

Methodology

As indicated above, this research will be informed by personal interviews, a structured Q Sort exercise, and documentation related to the respective institutions. The purpose of the interviews was to solicit information from participants about financial planning and decision making that their institutions, and to inquire about their perspective of the current state and manner of financial decision making. The format of the interview was informal. A set of guiding questions provided a framework for the interview, but not every question was asked of every person. The direction of the interview evolved naturally on the basis of the nature of the individual perceptives about the allocation of financial resources offered by the participants.

The primary source of data for the present study were structured Q Sort exercises conducted with each participant. The Q Sort is based on Q Methodology. That research methodology offers a means for developing quantitative, empirical representations of

subjective, personal viewpoints (McKeown & Thomas, 2013). Those quantitative representations are derived by means of applying factor analysis to the data. (More detail about the Q Sort process and factor analysis may be found in Chapter 3.)

Definitions

The following, presented by category, are terms that are pertinent to the topic of this study and to the methodology employed in the data analysis:

Organizational Behavior

- Organizational Behavior – Behavior of individuals in an organizational setting, defined in terms of the manner of interacting with other individuals or individually in response to the organization.
- Dimensions of Organizational Behavior – Categories of behavior within an organization classified in terms of predominance of related manifestations of behavior within the organization.

Q Methodology

- Q Methodology – Method of research that provides a means for developing quantitative, empirical representations of subjective personal viewpoints (McKeown & Thomas, 2013).
- Q Sort Statement – A word or phrase used as a prompt in Q Methodology to solicit the opinion or perspective of an individual related to a research question.

In the research report below, “Q Sort Statement” may be substituted with “Q Sort Item” or “Item.”

- Q Sort – A set of Q Sort Statements that has been sorted by study participants according to a specific, defined formation on the basis of opinions or perceptions that the participant assigns to those Statements. Because Q Sorts represent personal points of view, each individual Q Sort is typically unique from all others created by other individuals in the course of the study.

Factor Analysis

- Factor Analysis – Statistical method for reducing a large number of variables or, in the case of this study utilizing Q Methodology, points of view to a smaller number of “factors” based on commonalities among the variables or points of view.
- Factor – As described above, a statistically-combined set of variables or points of view that are affiliated in terms of common features.
- Factor Loading – Measure of the degree to which a variable, or in the case of this study, Q Sort is statistically correlated with a factor.

CHAPTER 2
LITERATURE REVIEW

Introduction

The version of the Higher Education Opportunity Act (HEOA) that ultimately emerged in 2008 following the work of the Commission on the Future of Higher Education intensified the scrutiny of higher education. One area of specific scrutiny, implied by the insertion of the term “Opportunity” in the title of the legislation, is the cost of higher education. The intensity of concern regarding the potential limitation of the opportunity for postsecondary education due to cost is underscored by the inclusion in early iterations of the HEOA of sanctions for colleges and universities at which increases in tuition and fees exceeded a federally-established higher-education price index (Field, 2007). Those sanctions were ultimately omitted from the new legislation signed into law, but the Act imposes new responsibility on colleges and universities to exercise greater transparency in their operations. The debate surrounding the reauthorization of the Higher Education Act signaled, in particular, the commencement of an era of heightened examination of higher education and a broadening of expectations regarding outcomes arising from postsecondary education.

Concern for the cost of higher education is not new. Nearly two decades prior to the passage of the HEOA, the U. S. Congress conducted hearings on what was perceived then as the high cost of postsecondary education (Waggaman, 1992). The activities surrounding those hearings at that time were similar to those performed by the Commission on the Future of Higher Education: gathering information regarding trends in costs, evaluating tuition increases and searching for explanations for the burgeoning costs in higher education. Earlier concern about the high cost of higher education (as

well as public safety on college campuses) is also evidenced by the 1990 passage by the U. S. Congress of the “Student Right-to-Know and Campus Security Act” (P. L. 101-542). That statute required all colleges and universities receiving federal student aid funds to calculate and publish the graduation rates of students at those institutions.

Graduation Rates and Student Retention

Student persistence and rates of graduation carry substantive implications for individual students, colleges and universities, and broad society (Hagedorn, 2012; Burnette, 2017). Research suggests that college graduates tend to possess higher degrees of self-esteem, enjoy better health overall, are inclined to better life choices, and exhibit superior parenting skills (Watts, 2001). Greater career opportunities with the consequence of higher levels of lifetime earnings typically accompany the completion of a college degree (Vandenbroucke, 2017). Benefits to society derived from college completion include lower rates of public assistance, more active civic engagement, and elevated levels of local and federal tax revenue (Vandenbrouchke, 2017). For colleges and universities, higher rates of graduation are perceived to indicate greater institutional effectiveness and magnified prestige (Berger, Ramirez & Lyons, 2012; Hagedorn, 2012). As a practical matter, student attrition and lower graduation rates diminish vital tuition and auxiliary revenue, and further decrease financial strength due to higher costs for student recruitment (Schuh & Gansemer-Topf, 2012; Raisman, 2013).

Although the passage and enactment of the “Student Right-to-Know and Campus Security Act” is nearly 30 years in the past, and despite the wide-reaching effects associated with college completion, focus on graduation rates, and student retention is a

matter of recent consequence in relation to the long history of postsecondary education in the United States. Marking the establishment of the first colleges on the American continent at roughly four centuries ago, in relative terms, focus on student retention is a matter of recent concern. As perspective, Berger, Ramirez and Lyons (2012) observed that simple institutional survival predominated the attention of institutional leaders over the first 250 years or more of higher education in the United States and predecessor colonies. Many early colleges were small and short-lived, and students of those times commonly attended college to obtain particular knowledge rather than to pursue a college degree (Berger et al., 2012). Under those circumstances, no notable consideration was afforded understanding, or even recognizing, students' decisions to depart from or remain in colleges until early in the Twentieth Century.

Pioneering Theories of Retention

One of the earliest studies of student departure was published by John McNeely in 1938. The study, sponsored by the U. S. Department of the Interior and Office of Education, sought to quantify what was referred to at that time as “college student mortality” or departure from college. The study was based on data pertaining to more than 15,000 students who entered college for the 1931/32 academic year, at 25 separate institutions, 14 public and 11 private. The study distinguished between “gross mortality” and “net mortality,” with the former representing departures prior to the four-year period typical for obtaining a degree, and the latter constituting gross mortality less the proportion students who completed degrees by transferring to other institutions or by returning to complete degrees after initially leaving.

McNeely found that “gross mortality” at public institutions averaged 64.5% and 58.5% at private colleges and universities with an overall rate of 62.1%. The mean for “net mortality” overall, across all institutions, was 45.2%. McNeely noted that the overall rate of departure for men exceeded that of women by 1.8 percentage points. Overall rates of departure by class diminished by class year with attrition of 33.8% for the freshman class and 3.9% for seniors. Reasons cited for leaving, ranging from highest to lowest in terms of incidence, included dismissal, financial difficulty, miscellaneous reasons, lack of interest, sickness, needed at home, and death.

Interest in student retention grew over the course of the Twentieth Century as various circumstances resulted in remarkable expansion in enrollment in postsecondary study and broadening in the diversification of those who attended college (Berger, et al., 2012). In 1935, in response to the Depression, the federal government established the National Youth Administration which inaugurated programs that expanded opportunities to attend college. Following the end of World War II, with the intent of fostering the reintegration of soldiers into civilian life, the G. I. Bill afforded returning soldiers valuable educational benefits. Stimulated by the launch of Sputnik, the urgency to compete technologically with Soviet Union stimulated passage of the National Defense Education Act of 1958 and Higher Education Act of 1965. In tandem with growth in the number of students attending college, social and political change of the 1960s transformed the face of higher education. The Civil Rights Movement and intensifying antagonism to the Viet Nam War served as context for expanding diversity of students in terms of socioeconomic status, ethnicity, political orientation. Student engagement in

college became more complex than just aligning academic interests with institutional curricula.

Despite the growing body of research on college attendance and departures associated with the changes in higher education during the Twentieth Century, paucity of theoretical models that explained the phenomena extended into the latter half of the century (Bean, 1983). A particularly illuminating perspective of the want for meaningful theoretical frameworks describing student development, and by extension student persistence, of that time was provided by Astin (1984): “Even a casual reading of the extensive literature on student development in higher education can create confusion and perplexity. One finds not only the problems being studied are highly diverse but also that investigators who claim to be studying the same problem frequently do not look at the same variables or employ the same methodologies. And even when they are investigating the same variables, different investigators may use completely different terms to describe and discuss these variables” (p. 297).

Summerskill (1962) was an early contributor to the development of theoretical bases for student persistence. He observed that a complex array of influences affected student attrition including psychological and sociological matters, family concerns and economic factors. Relying on principles of psychology and sociology, he identified motivation as a factor in student persistence, and suggested that motivation could be separately directed toward attendance at a particular institution as well as to the general aspiration of completing a degree. He also speculated that institutional characteristics impinged on student persistence. Morrison & Silverman (2012) opined that the significance of Summerskill’s early contributions were not defined by quantitative

research but lay in his interdisciplinary insights that influenced significant subsequent works of others.

Another source of momentum for theoretical evolution regarding student persistence was Durkheim's (1961) seemingly unrelated study of suicide (Braxton & Hirschy, 2005; Spady, 1971; Tinto, 1975). In his study, Durkheim established a taxonomy of suicide that included one form that he identified as egoistic suicide. That type of suicide, he suggested, arose from some combination of a marked disparity in values between an individual and his or her social milieu, and/or inadequate social interaction of the suicidal individual with others. Spady (1971) drew upon analogies between Durkheim's perspectives on suicide and student attendance to direct attention to the implications for student persistence arising from the alignment of the personal values of students with the distinctive characteristics of the institutions they attended. Building upon the notion of the relationship between individuals and their environments, Spady observed that in the uniqueness of the college environment students encountered both the social facet, referenced by Durkheim, as well as an academic dimension. Within the duality of the social and academic components inherent in environments of postsecondary institutions, Spady proposed that students could potentially find success, independently, in one or the other, or in both. Spady maintained that the nature of the interaction between students and these dual aspects of their environment determined the degree of their integration in the social and academic dimensions of their environments. Spady reasoned that the extent of that integration strongly influenced the likelihood of student persistence.

Contemporaneous with the work of Spady, Kamens (1971, 1974) applied a sociological perspective to the persistence of college students. The foundation for the work of Kamens (1971) was what he referred to as the “charter” of colleges and universities, noting that a “charter” represents the “agreed-upon definitions of what the agency is supposed to produce” (p. 271). Kamens proposed that a distinctive component of the charter of postsecondary institutions was the advancement of students into rewarding occupational and economic circumstances. With respect to the sociological mechanism by which colleges and universities fulfill that charter, Kamens (1971) suggested that research of that time was directed predominantly toward the processes of socialization *within* colleges and universities. He proposed that too little attention had been given to assessing the influence of the external context of colleges and universities on students. Kamens argued that two external factors, that operated separately from the internal sociological processes of postsecondary institution, influenced persistence of students: the prestige and size of the institutions.

Kamens (1971) argued that institutional prestige fostered greater levels of persistence in students for two reasons. First, the higher the prestige of colleges and universities, the greater the probability that graduation from those institutions would translate into higher professional and economic success. Consequently, students possessed greater impetus to continue in their educational pursuits to achieve those ends. Kamens posited that higher prestige contributed to elevation of students’ perception of the merit of affiliating with such institutions, resulting in a greater commitment to maintaining that affiliation and persisting to graduation.

As for the influence of the size of the institution on student persistence, Kamens (1971) assumed a stance that countered the prevailing point of view about institutional size. His position was based on the perspective that effective socialization depended on close personal relationships and high degrees of interpersonal activity and dependencies. Despite the likelihood of those conditions being more prevalent at small institutions, Kamens proposed that larger institutional size would contribute to higher rates of student persistence. Arguing from the viewpoint that the principle charter of institutions was to assist students in their socialization into occupational roles, Kamens proffered that, due to the greater breadth of factors such as areas of study, course offerings, opportunities for graduate and professional study, and routes of entry into professional fields available at large institutions, large institutions “have distinctive effects on students’ occupational decisions” (p. 293). Those “distinctive effects,” he concluded engender a greater sense of determination in students at large institutions to persist in their progress toward graduation.

The sociological perspectives in models such as those offered by Durkheim (1961), Kamens (1971), and Spady (1971) served as stepping stones to a landmark theoretical model of student persistence developed by Tinto (1975). Tinto’s conceptualization of student persistence grew into a comprehensive model that described student persistence predominantly as a function of the interaction of students with their institutions and individuals associated with the institutions. Tinto’s interactional model found broad acceptance within higher education, and remains widely known and frequently cited by researchers (Berger, Ramirez & Lyons, 2012).

Tinto's model, as illustrated in Figure 1, portrayed the decision of students to either leave or continue in their studies as a longitudinal process, with the decision evolving over time. The nature of the decision is premised on changing degrees of what Tinto described as the students' "goal commitment" and "institutional commitment." Tinto defined goal commitment as the extent to which students were dedicated to the obtainment of a postsecondary degree. Institutional commitment, according to Tinto, represented "the dispositional, financial and time commitments individuals make in attending a particular institution (or type of institution)" (pp. 93-94).

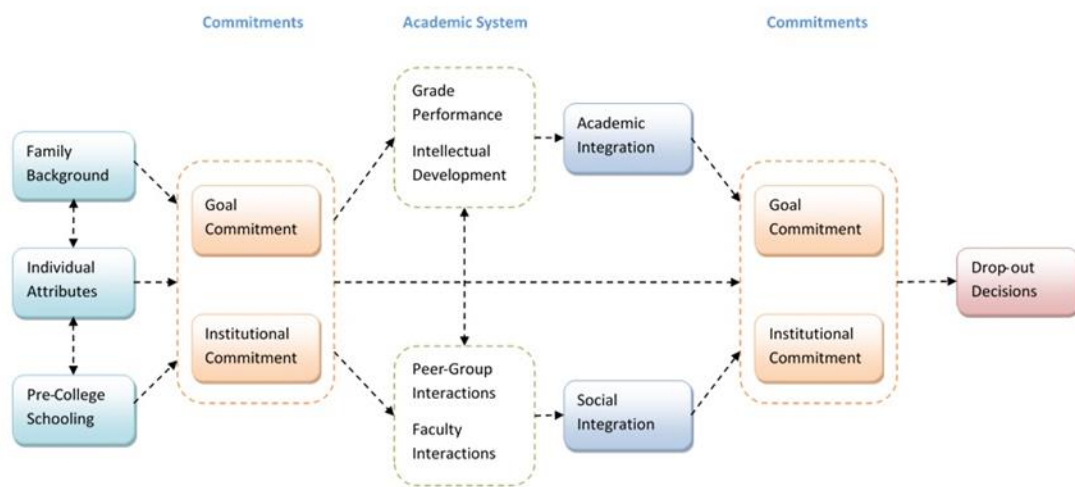


Figure 1. Tinto's (1975) Model of Student Departure

Tinto (1975) posited that the interaction of respective levels of goal commitment and institutional commitment determine the probability that students will persist in their progress toward degree completion. He suggested, for example, that students with sufficiently high goal commitment, despite low institutional commitment, would be likely to complete a postsecondary degree—although the fulfillment of that goal might entail transfers to institutions other than those where the students initially enrolled.

Alternatively, following Tinto's schema, students with low commitment to the goal of obtaining a postsecondary degree may nonetheless persist to graduation if their institutional commitment is appropriately elevated.

Levels of goal commitment and institutional commitment, and hence the likelihood of student persistence, as proposed by Tinto (1975), are subject to change based on multiple factors. Students approach postsecondary study with goal commitments and institutional commitments premised upon their family backgrounds (e.g., socioeconomic status, parents' level of education, familial affluence, degree of parental interest in and expectations for the education of their children), students' individual attributes (e.g., personality, attitude toward education, inherent personal intellect, gender), and preparation through past educational experiences (commonly objectively defined by high school grades or achievement on standardized tests).

Once within what Tinto (1975) described as the academic system, the pre-enrollment goal commitments and institutional commitments of students may be further cemented or modified as determined by the experiences of the students within the academic system. Specifically, Tinto posited that those levels of commitment and, by extension, propensity to graduate, are determined by two types of integration with the academic system: academic integration and social integration. Academic integration, according to Tinto (1975), describes the extent to which students feel a sense of congruence with the academic character of the institutions in which they are enrolled. Examples of factors that influence academic integration include the perception of intellectual growth derived from academic engagement, alignment between students'

perceptions of their intellectual standing and the intellectual atmosphere of institutions, and performance in classes, particularly as measured by grades.

Social integration, similarly, occurs as students perceive an alignment with the social fabric of institutions. Illustrations of elements comprising the social fabric of institutions that contribute to social integration of students include interactions with peers, involvement in extracurricular activities, and engagement with faculty members and administrators associated with institutions. Within Tinto's theoretical construct, the degrees to which students experience academic integration and/or social integration modify levels of goal commitment and institutional commitment that students bring with them into the academic system; and the directions and intensities of those changes in commitment types determine the probabilities of the persistence of students and degree completion.

Nearly two decades after Tinto's (1975) articulation of his theory of student persistence, based on personal research and the body of knowledge derived from the study of others, Tinto (1993) expanded on his original construct. By using such specific terminology as "interact with" and "experience," he afforded increased attention to the behavioral component of student involvement within the institutional environment. Related to student behavior, Tinto outlined a three-step sequence that, based on how students navigated that sequence, determined the manner and the extent to which students achieved academic and social integration. As the first step in the sequence, he identified *separation*, or the act of creating increased independence from friends, family or other groups or entities that influenced and defined normative behavior for the students. Tinto proposed that *transition* occurred next in the sequence, with that representing a period

during which the preeminence of prior sources of influence diminished but had not been fully supplanted by growing influences within the new institutional environment. Tinto listed *incorporation* as the third and final step in the sequence, and characterized that as a state in which students primarily embraced and adapted to behavioral practices and perceptual norms circumscribed by the institution.

In later years, Tinto (2017) further augmented his theoretical schema on the basis of what he considered to be the critical delineation between student persistence and student retention. He observed that the focus of institutions was typically the latter—to retain as many students as possible. In particular, Tinto (2017) opined “For years, our prevailing view of student retention has been shaped by theories that view student retention through the lens of institutional action and ask what institutions can do to retain students” (p. 254).

In contrast to student retention, Tinto (2017) observed that students strived to persist in their educational endeavors—to continually progress toward the obtainment of a degree. While student persistence and student retention can appear similar, Tinto maintained that the two are not the same, that the interests of institutions and students can be distinctly different. Although student persistence offers the potential for colleges and universities to maximize the proportions of students retained until graduation, student persistence could also be achieved, contrary to the aspirations of postsecondary institutions, by students completing degrees at institutions other than those in which they initially began their postsecondary studies.

With the distinction between retention and persistence in mind, Tinto (2017) sought to correct the imbalance of the focus between the two, in theory and in practice,

favoring attention on student retention, by introducing a new conceptual framework, one that institutions could use to better foster student persistence. Tinto, building on the work of others (Bandura, 1989; Graham, Frederick, Byars-Winston, Hunter & Handelsman, 2013), stipulated that persistence is the realization of motivation. Underscoring that notion, Tinto (2017) proposed, “Without motivation and the effort it engenders, persistence is unlikely” (p. 255).

Tinto (2017) acknowledged that this concept of motivation that he proffered did not constitute a comprehensive model of motivation. Rather, he proposed that an awareness of the role of motivation in student persistence could be instrumental in guiding those who interact with students in institutional settings in the facilitation of persistence in those students.

As a departure to Tinto’s interactionalist theory, Astin (1975, 1977, 1984), offered a theory of student persistence that set aside the psychological concept of “commitment” or “motivation” inherent in Tinto’s model. Astin, instead, focused on the role of student involvement. In describing his theory of student involvement, Astin (1984) proposed that involvement “implies more than just a psychological state; it connotes the behavioral manifestation of that state” (p. 301). Motivation, according to Astin, needed to be accompanied by effort, as exemplified by vigilance or time-on-task.

Astin’s theory of student involvement emerged from a study of what he termed student “drop out” (Astin, 1975). A subsequent longitudinal examination of college-related outcomes allowed Astin (1977) to build upon his initial conceptualization of student involvement. That further examination was based on a comprehensive data set collected through the Cooperative Institutional Research Program of the American

Council on Education in collaboration with the University of California at Los Angeles (Astin, 1977). The data set, amassed over a ten-year period, comprised more than 80 outcome factors pertaining to more than 200,000 students who attended approximately 300 postsecondary institutions.

In the latter study, Astin (1977) directed attention to student outcomes, and identified various factors related to those outcomes. The factors included place of residence, honors programs, undergraduate research participation, social fraternities and sororities, academic involvement, student-faculty interaction, athletic involvement, and involvement in student government. In a generalization of the results of this wide-ranging study, Astin (1977) suggested essentially all factors that enhanced student persistence could be construed as some form of involvement within the broad context of college attendance. He added that that involvement magnified the developmental changes of students.

In later elaboration, Astin (1984) identified the following five concepts as the foundational postulates for his theory of student involvement:

1. Involvement is characterized by the outlay of psychological and physical energy in either a generalized or focused manner, as determined by the objective of the outlay.
2. The intensity of involvement may be distributed along a continuum. Several students attending to the same endeavor may do so with varying degrees of involvement, or a single student may pursue multiple objectives with differing levels of involvement.

3. Involvement possesses qualitative and quantitative facets, as determined, for example, by the measure of care or intensity of focus exhibited by students, or by the amount of involvement expended by students within a unit of time.
4. A direct correlation exists between the level of personal development and learning experienced by students and the degree of involvement, qualitatively and quantitatively, they devote to it.
5. The efficacy of policies and actions within higher education is a function of the extent to which those encourage student involvement.

As a matter of retrospection, Astin (1984) identified a two-fold impetus behind his creation of the theory of student development and its focus on involvement. Determination to contribute order into what he perceived at the time as the perplexing and confusing cacophony of information within the literature related to student development and, by extension, student persistence, served as one stimulus. In addition, Astin acknowledged that, on a personal level, he was driven to bring better understanding to the self-described muddled nature of results within his own body of research.

According to the following criteria, Astin concluded that his developmental theory of student involvement fulfilled those aspirations. First, the theory, he suggested, was inherently parsimonious—it could be explained without the use of elaborate diagrams or complex instruction. In addition, he argued that the theory successfully accounted for much of the empirical understanding accumulated to date about the effect of environmental context on student development. Astin also posited that the theory effectively integrated diverse principles from other disciplines, citing as examples

classical learning theory and psychoanalysis as examples. As the final criterion, Astin opined that the theory could be meaningfully applied both in directing further research on student development as well as in providing useful parameters for the development of practices within higher education that would foster student learning.

Astin (1993) later expanded his model of student involvement to explain student involvement and, by extension, student outcomes in terms of the interaction between student characteristics and the institutional environment. This model, referred to as the Input-Environment-Outcome (I-E-O) Model, was comprised of three key components as identified by Astin: “*Inputs* refer to the characteristics of the student at the time of initial entry to the institution; *environment* refers to the various programs, policies, faculty, peers, and educational experiences to which the student is exposed; and *outcome* refers to the student’s characteristics after exposure to the environment” (p. 7). The I-E-O Model succinctly conceptualized Astin’s portrayal of the uniqueness with which the institutional environment interacted with the characteristics of individual students to produce differing, student-specific types and levels of student involvement and student outcomes.

Expansion on Pioneering Theories

The foundational work of Astin (1977), Kamens (1971), Spady (1971), and Tinto (1975) (complemented by the less frequently cited contributions of others, including Boshier, 1973; Fishbein & Ajzen, 1975; Rootman, 1972; Sewell & Hauser, 1976) continues to serve as the foundational platform from which further theoretical elaboration and integration have emerged, and on which empirical study and administrative practices have been grounded. Tinto’s (1975) interactional model of student persistence, along

with his expansion on it (Tinto, 1986, 1993, 2017), in particular, has emerged as the construct most frequently utilized to provide explanations for, guide research on, and address student persistence (Berger, Ramirez & Lyons, 2012; Braxton, Milem & Sullivan, 2000; and Terenzini & Pascarella, 1980).

Following on the early work of Astin (1977), Spady (1971) and Tinto (1975), Bean (1979, 1980, 1983) proposed an alternative to those models. Bean's conception of student persistence generally aligned with the focus in earlier models on the importance of the interaction of students with their environment in determining persistence. He took exception, however, to the notion underlying predecessor theories that Durkheim's (1961) model of suicide represented a meaningful guide for understanding student attrition. Bean countered that processes associated with student departure were more akin to those that affiliated with turnover of employees in the workplace. Bean synthesized the work related to employee turnover of Price (1977) and Price and Mueller (1981) with extant theory and research on student persistence to offer an alternative theory that he described as the industrial model of student attrition.

Price and Mueller (1981) demonstrated a relationship between seven organizational characteristics and job satisfaction, and they showed that increases in job satisfaction resulted in decrements in the intent of employees to leave their employment. Bean premised his industrial model of student attrition on the existence of a similar relationship between institutional factors and student satisfaction. In the creation of his model, for those organizational characteristics from the Price and Miller model that could not be directly applied to higher education, Bean identified analogues. He substituted student grades, for example, for the pay of employees.

Simplistically stated, the general principle shared between Price's and Mueller's model of employee turnover and with Bean's industrial model of student attrition was that organizational factors influence employee or student satisfaction, and that satisfied employees or students were less intent on leaving their employment or enrollment. Bean noted that a key feature of the shared models was that the organizational factors impinging upon the satisfaction of employees or students constituted what he referred to as "structural variables" which he defined as variables under the potential control of organizations. Consequently, those structural variables offered opportunities for organizations to exercise influence over determinants of persistence—whether for employees or students.

Pascarella (1980) put forth a theory of student persistence that also relied on interaction between students and institutions. Rather than consider various types of interactions, however, his theory directed pinpoint focus on the nature of student-faculty relationships. As an example of the importance of meaningful student-faculty relationships, Pascarella cited earlier researchers (Mayhew, 1969; Taylor, 1971) who suggested that the tumult that encompassed college campuses in the late 1960s and early 1970s was, in part, a consequence of the impersonality sensed by students and lack of substantive communication and engagement with faculty outside the classroom. Pascarella added to that perspective with the observation that, at that time, higher education, and faculties in particular, were not fulfilling the growing societal expectation that the postsecondary experience should extend beyond classroom learning to include development of personal identity, critical-thinking skills, capacity for problem solving, interpersonal abilities; the identification and confirmation of cultural values; and

preparation for careers, intellectually and professionally. Describing colleges and universities as socializing agencies, he posited that members of faculties and administrations, and fellow students served as critical agents of socialization. Pascarella, drawing upon a broad body of study, highlighted manifold benefits achieved when students and faculty engaged with each other, not only in formal learning experiences, but also in frequent, informal and diverse situations outside the classroom. Those included fostering a sense of purpose in students; enhancing students' levels of satisfaction with college generally, and with discrete aspects of their experience, specifically; elevating the perceptions students possess regarding the contributions of faculty members to their personal and intellectual development; and positively influencing the importance students place on their academic achievements. With regard to the particular issue of student persistence, Pascarella opined that meaningful student-faculty interactions, formal and informal, represented a key element in the social and academic integration inherent in the persistence models of Spady (1971) and Tinto (1975). He emphasized the importance of those interactions by reflecting on empirical study that provided strong indication of linkage between student-faculty interaction and student persistence.

Bean and Metzner (1985) noted that "traditional" students served as the predominant point of focus in early theory and research related to student persistence. They reasoned that, since nontraditional students faced fundamentally different circumstances in the pursuit of postsecondary education, a different set of factors may influence their persistence. For purposes of examining whether differing sets of factors propelled traditional versus non-traditional students to persevere toward degree

attainment, Bean and Metzner defined non-traditional students as being “older than 24, or does not live in a campus residence (e.g., is a commuter), or is a part-time student, or some combination of these three factors; is not greatly influenced by the social environment of the institutions; and is chiefly concerned with the institution’s academic offerings (especially courses, certification, and degrees)” (p. 489). In consideration of the characteristics that distinguished non-traditional students from their traditional counterparts, they proposed a theory that diminished the weight of the influence of social interactions within institutions on student persistence, as found in the theories of Astin (1977), Spady (1971) and Tinto (1975). Instead, Bean and Metzner posited that greater influence on persistence among nontraditional students would emanate from social factors external to the institutions they attended. In their modified theory pertaining to non-traditional students, Bean and Metzner offered the following as examples of external social factors that warranted attention in better understanding patterns of persistence among non-traditional students: family responsibilities, hours of outside employment, or the amount of encouragement from important individuals outside the institution.

As an alternative to the development of new theory or ascertaining the superiority of one theory over all others in explaining and fostering student persistence, Cabrera, Castaneda, Nora and Hengstler (1992) considered the value to be found in the convergence of two theories. The two theories subjected to consideration were Tinto’s (1975) theory of student integration and Bean’s (1980) model of student attrition. Cabrera et al. observed that the two theories shared notable overlap. Both theories, for example, attributed student persistence to the complex interaction of factors over time. Both also recognized that students’ characteristics acquired prior to postsecondary study

contributed to persistence in their studies, and the likelihood of persistence corresponded with the favorableness of the match between students and their institutions.

Cabrera et al. deemed the two models as dissimilar in terms of how those incorporated the influence of factors external to the institution on persistence, with that influence missing from Tinto's model. Academic achievement represented another differentiating factor. Tinto's model used academic achievement as a measure of academic integration, but within Bean's construct considered academic achievement an outcome of processes in which students were engaged. In addition, Cabrera et al. noted that existing research based on Tinto's model ascribed persistence to academic and social integration and on institutional commitment. In contrast, studies of persistence founded on Bean's theory highlighted the contributions of student attitudes, fit with the institution, intent to persist and factors external to the institution to persistence.

In an empirical evaluation of the value derived from a convergence of the models, Cabrera et al. confirmed the overlapping nature of features that the models shared in common. Despite points of dissimilarity between the models, rather than determine that those pointed to the mutual exclusivity of applying the models to the study of student persistence, the researchers concluded that those differences represented instances of complementarity. In particular, the role of external factors in Bean's model of student persistence compensated for the absence of that component in Tinto's model.

Summarizing the implications of their empirical findings on their suggestion to combine the theories of Tinto and Bean, Cabrera et al. noted that a more robust understanding of student persistence can be derived from an integration of the two theories. Each theory provides pertinent knowledge about the phenomenon of student persistence, but they

purported that combining the major features of the two theoretical models offers potential for magnifying gains in understanding student persistence.

Similar to the work of Cabrera, Castaneda, Nora and Hengstler (1992), Milem and Berger (1997) proposed that, rather than considering the models of Astin (1977) and Tinto (1975) as separate tools for understanding student persistence, those models contained complementary features. Taken together, they posited, those models offered utility for more fully explaining why students choose to persist or depart. Milem and Berger premised their proposal on the distinction between the models of Astin and Tinto in terms of the respective portrayals of students' affiliations and relationships with their institutions. The researchers observed that the commitments of students to their institutions and to the goal of completing an education constituted significant determinants of persistence in Tinto's (1975) model, and that the intensity of those commitments was a function of individual student characteristics and degree of integration within institutions. Milem and Berger noted that, in contrast, Astin (1977) countered that students' integration in and/or commitment to institutions involved more than the psychological or sociological constructs of adopting the norms of the institutions. Astin argued that, through their behavior—by the exertion of psychological or physical behavior—students manifest integration in or commitment to institutions. Based on both concepts and supporting research from social psychology, Milem and Berger (1997) proposed that alignment with either Astin's (1977) or Tinto's (1975) model did not preclude acceptance of the other model. In particular, Milem and Berger drew on the signature conceptualization of noted behavioral theorist, Kurt Lewin (1936), "Behavior is a function of the interaction between the environment and the person

($B(f) = E \times P$),” and its implication that individuals’ perceptions within given environments give rise to certain behaviors, and that those novel behaviors possess potential for altering current perceptions. Milem & Berger theorized that understanding of student persistence could be enhanced by integrating the behaviorally-oriented framework of Astin with the perceptually-based concept of Tinto in a unified mechanism for studying student involvement.

Braxton and Hirschy (2005) proposed elaborations on Tinto’s (1975) model that drew upon empirical studies of student persistence from different points of view: psychological, organizational, sociological and economic. An inductive examination of results from those studies led them to offer two new, separate theories of student persistence, one pertaining to residential students and the other to commuter students. For residential students, Braxton and Hirschy refined the longitudinal process of Tinto’s model to eliminate the requirement of academic integration and to direct greater emphasis on social integration. They identified seven critical antecedents, all of which they posited are influenced by students’ individual characteristics at the commencement of their postsecondary studies. In sequential relationship, Braxton and Hirschy proposed that those initial student-specific characteristics influence both their levels of commitment to completing a degree and to their selected institutions. Commitment to the goal of completing a degree constituted the first of the seven antecedents to social integration. Braxton and Hirschy suggested that the degree of students’ commitments to their institutions influenced the next five antecedents of social integration. Three of those five antecedents related to perceptions of institutional characteristics: (a) the degree of institutional concern about student development and growth, (b) the measure of

institutional integrity, determined by the extent to which the actions of personnel within the institution correspond to the stated mission of the institution, and (c) the potential for students to integrate into the community fabric of the institution. Braxton and Hirschy pointed to two psychological features as the two remaining antecedents to social integration that were influenced by institutional commitment. Those were the capacity of students to respond positively to the pressure of social interaction, which the researchers referred to as proactive social adjustment; and psychosocial engagement, or the psychological intensity employed by students in interactions with others and activities within the institution. The seventh antecedent to social integration identified by Braxton and Hirschy was as a function of initial student-specific characteristic, and that was the ability of students to pay for their education. Braxton and Hirschy summarized their revision of Tinto's (1975) model, as it related to residential students, by noting that both social integration and commitment to the institution affect student persistence, with social integration serving as a central influence on persistence among residential students.

Braxton and Hirschy (2005) contrasted commuter students with residential students by observing that, for residential students, in most cases, participation in college represented an exclusive endeavor, but commuter students participated in college "in addition to" significant involvement in and commitment to other aspects of life. Consequently, campus environments and external environments both affect the persistence of commuter students differently than residential students. In addition, the role filled by academic integration versus social integration factored more prominently as a determinant of persistence for commuter students than for residential students. In the theory of commuter-student persistence, Braxton and Hirschy emphasized the

significance of such student-entry characteristics as highly-motivated, disciplined and capable of self-efficacy. They noted, in contrast, that a diminished likelihood of persistence might be found in students whose set of characteristics included an enhanced sense of empathy to the concerns of others and who perceived their college attendance to have a negative effect on those to whom they were close. Similarly, in the commuter-student model of persistence, the researchers suggested that the positive or negative encouragement of others within the external environment influenced persistence among commuter students more prominently than among residential students.

Within the institutional environment, Braxton and Hirschy posited that, like residential students, commuter students would be influenced in their persistence by institutional integrity and the commitment of the institution to the welfare of students. In the both cases, however, the commuter students' perceptions of institutional integrity and of concern and support for students were likely to be determined on the basis of different factors than those perceived as important by residential students.

As another point of differentiation between the residential and commuter-student models of persistence, Braxton and Hirschy purported that, for commuter students, the classroom constituted more than the site of learning. Rather, the classroom offered commuter students an integration of academic and social experiences, a place not only for intellectual enrichment, but for meaningful interaction with faculty members and fellow students. In that light, the researchers proposed that active learning would especially facilitate commuter-student persistence. They reasoned that, more than for residential students, active learning would enhance the sense of social affiliation among commuter students; and enhanced social affiliation would, in turn, increase institutional

commitment, leading to higher rates of persistence. In short, Braxton and Hirschy concluded that the distinct differences between residential and commuter students in terms of their personal characteristics and interaction with the campus environment warrant distinctly different theories for those disparate cohorts of students.

The foregoing represents a broad sampling of theories describing student persistence. As implied from this overview, an array of theories has emerged from the augmentation and integration of early pioneering theories, as well as from the introduction of new, original models. Nonetheless, a small selection of theories predominates the literature of student persistence. In a review of theories of student persistence, Aljohani (2016) identified these as the six most-cited models in the literature of student persistence: the Undergraduate Dropout Process Model (Spady, 1971), the Institutional Departure Model (Tinto, 1975, 1993), the Student Attrition Model (Bean, 1980), the Student-Faculty Informal Contact Model (Pascarella, 1980), the Non-traditional Student Attrition Model (Bean and Metzner, 1985), and the Student Retention Integrated Model (Cabrera, Castaneda, Nora and Hengstler, 1992).

From theory, evolving attention to student persistence took the form of scholars validating and conducting research based on those theories, and practitioners applying theoretical principles and research findings to the development and administration of practices intent on enhancing student persistence. The predominant focus on the topic of persistence also spawned a dedicated academic journal, *The Journal of College Student Retention: Research, Theory & Practice* (Berger, Ramirez, Lyons, 2012).

Evaluation and Empirical Validation of Theories

Terenzini and Pascarella (1980) are notable for their early evaluation of the empirical validity of theories of student persistence. In a series of six studies, they (Pascarella & Terenzini, 1977, 1979a, 1979b, 1980; and Terenzini & Pascarella, 1977, 1978) evaluated several aspects of Tinto's (1975) model. With respect to that facet of Tinto's model that suggested that individual characteristics of students and their experiences prior to enrollment in postsecondary study influenced their likelihood of persistence, Terenzini and Pascarella found no statistically significant difference between the groups that they referred to as "stayers" and "leavers" in terms of those personal characteristics or prior circumstances.

Based on the operational measures that the researchers devised for assessing the impact of the two primary constructs of Tinto's model, social integration and academic integration, Terenzini and Pascarella concluded that both were significantly correlated with student persistence. In addition, they observed a compensating relationship between those two forms of integration, with higher degrees of one form of integration favorably offsetting lower levels of the other. Terenzini's and Pascarella's assessment of the features of the academic system (i.e., grade performance, intellectual development, and interactions with peer groups and faculty) that Tinto proposed impinged on student integration and ultimate persistence revealed that, while important, the influence of those features was not universal across students, but affected individual students differently.

Overall, Terenzini and Pascarella suggested that their research provided strong statistical support for the differences between students who persisted to graduation and those who did not on the basis of Tinto's theory. They observed, however, that their

statistical models explained about 30% of the variance between groups, implying that there remained “a considerable way to go in fully understanding the dynamics of the attrition process” (Terenzini & Pascarella, 1980, p, 277).

Attinasi (1989) observed that the emergence of theories of student persistence provided meaningful conceptual basis for study and advanced understanding of the factors influencing the decisions of students to persist in or depart from their studies. He proposed, though, that those models offered only modest success in explaining the complexity of the dynamics that contribute to student persistence or attrition. He attributed that limitation to multiple factors. One was the constraint that he proposed arose from attempting to explain student persistence in terms of what theorists deemed to be parallel phenomena outside higher education.

Attinasi argued, for example, that assuming that departing from college was equivalent to suicide (Durkheim, 1961; Spady, 1971; Tinto, 1975) or voluntary departure from employment (Bean, 1979, 1981, 1983; Price & Mueller, 1981) could leave researchers disinclined to examine an appropriately broad range of factors. Attinasi also expressed criticism of research methodology based on theories of student persistence. He noted that those typically relied on institutional data or forced-choice questionnaires that offered minimal capacity for fully understanding the contextual nuances that influenced students’ perceptions and, consequently, their decisions to leave or persist. Attinasi recommended that researchers expand their reliance on the views of students and exercise greater flexibility in adhering to the rigid frameworks of theoretical models of student persistence.

Braxton, Sullivan and Johnson (1997) conducted a noteworthy appraisal of Tinto's (1975) theory of student persistence based on a meta-analysis of studies of student persistence over the approximately two decades since the initial advent of Tinto's theory. They disaggregated those studies into three categories: multi-institutional studies, single-institution studies, and studies of types of students. The researchers empirically and conceptually analyzed level of support for 13 individual propositions implied by the sequential interrelationships among the components of Tinto's longitudinal model. They reported their findings in detail, by individual proposition and in terms of the three study categories, concluding that significant empirical support was found for only 5 of the 13 propositions. Braxton, Milem and Sullivan (2000) offered the following, subsequent distillation of the detailed findings from that study:

Put in narrative form, . . . student entry characteristics affect the level of initial commitment to the institution. . . . The initial level of commitment to the institution influences the subsequent level of commitment to the institution. This subsequent level of institutional commitment is also positively affected by the extent of a student's integration into the social communities of the college. The greater the level of subsequent commitment to the institution, the greater the likelihood of student persistence in college (pp. 569-570).

Based on the limited number of propositions in the Tinto (1975) model for which Braxton, Sullivan and Johnson (1997) found empirical support, they recommended revision of the theory. Nonetheless, they suggested that Tinto's model represented an enlightening framework for understanding student attrition, managing enrollment and encouraging an insightful glimpse into other aspects of the full college experience.

Beyond particular theoretical models of student persistence, Bean (2005) identified nine themes, found in differing degrees in the various models, that affected student persistence: (a) the student's background, (b) money and finances, (c) grades and

academic performance, (d) social factors, (e) bureaucratic factors, (f) the external environment, (g) psychological and attitudinal factors, (h) institutional fit and commitment, and (i) intentions related to persistence and degree attainment. According to Bean those themes emerged from nearly three decades of empirical study, conceptualization and applied work related to student persistence.

In his enumeration of themes, Bean acknowledged the absence of demographic distinctions. He posited that those were subsumed within the nine themes. He offered, as illustration, data that linked differing rates of persistence and degree completion with differences in ethnic backgrounds. He contended that any such differences were attributable to one or more of the nine themes, not to ethnicity. As example, Bean proposed that early departure may occur as a response to poor institutional fit arising from a culture of bigotry or as a consequence of inadequate academic preparation in high school, and would not indicate systematic differences in capacity for postsecondary study across races. He posited that factors, or themes, influencing student persistence applied, without distinction, to all categories of students.

Other assessments of models of student persistence centered on the prominent components of the theories, or on classification of theories according to the primary theoretical focus. In an evaluation of salient features within theories of student persistence, Braxton and Brier (1989) concluded that two primary frameworks of most studies were the organizational and interactional frameworks. They suggested that the organizational framework was typified by the theory of Bean (1981, 1983) that drew upon the work of Price and Mueller (1981) to explain student attrition on the basis of characteristics of the organization. The interactional framework, as explained by Braxton

and Brier, represented the nature of the “fit” between students and the institutions they attend. They cited the interactionist theory of Tinto (1975) as an example of this framework, and received later support in research by Munro (1981), Pascarella and Terenzini (1980), and Terenzini, Pascarella, Theophilides, and Lorang (1985).

In a subsequent evaluation of theories of student persistence, Braxton, along with other colleagues (Braxton, Sullivan and Johnson, 1997), further refined the conceptual classification of those theories. They identified four dimensions of focus among those theories: psychological, societal, economic and organizational. They suggested that the psychological dimension of student persistence was defined by such student characteristics as student maturity, or the manner with which students responded to their personal experiences. The societal dimension pertained to the extent to and manner with which social forces influenced students’ persistence. Included in the societal dimension were interactions with peers, faculty and administrators within the institution and the attainment of social status and membership within the social structure of the institution.

The economic dimension encompassed financial determinants of students’ likelihood to persist in their educational pursuits. Among those were the cost of education, including earnings or financial benefits foregone in order to attend college, the ability of students to afford postsecondary study, and a balancing the costs against such future benefits as future earnings, quality of life and status attainment. The organizational dimension pertained to the distinguishing features of institutions in terms of size and type of institution, selectivity, quality and extent of resources, structure of the organization and organizational focus. Degree of fairness in the administration of policies and rules, opportunities to participate in institutional decision-making and the

nature of communication within the institution also factored into the organizational dimension.

Aljohani (2016), in a digest of literature of student persistence, presented a categorization of theories and studies on the topic that was like that of Braxton et al. (1997). He noted, as well, alternative categorizations of theoretical factors that were described by other scholars of student persistence (cf. Braxton, 2000; Braxton & Hirschy, 2005; Habley, Bloom & Robbins, 2012; and Tinto, 1993). Those included the identification of the interactional facet of some theories as an additional dimension, separate from the psychological, sociological, organizational, environment and economic dimensions. In another view, the sociological, organizational and economic facets were grouped together under the single heading of environmental. Aljohani suggested, however, that the psychological and sociological perspectives constituted the predominant frameworks for the study of student persistence. Yet those who subscribed to the interactionalist conceptualization of student persistence recognized the importance of including the organizational dimension as the factor against which students (psychologically or sociologically) interacted.

Altman (2016) simplified the classification of theories and scholarship related to persistence by proposing three categories of focus: (a) the environmental, involvement and socialization perspectives, (b) the pre-college attributes perspective, and (c) the scholarships and financial aid perspective. The first category, combining the environmental, involvement and socialization perspectives centered on the experiences of students as they interacted with the characteristics of the institution, including fellow students, faculty members and administrators, and with environmental factors outside the

institution. The pre-college attributes perspective provided attention to the manner with which the individual characteristics students possess at the time they embark on their postsecondary college experience affect integration in the academic and social systems of their institutions and, by extension, their persistence. Altman recommended the third category, the scholarships and financial aid perspective, on the recognition of the significant impact of financial matters on the decision of students to persist or depart from the academy.

As implied above, the organizational perspective represents a predominant dimension of student persistence that is common among most relevant theoretical renderings and scholarship. This current study originated from a consideration of a selected element of the organizational dimension, that being the relationship between the allocation of financial resources within the institution and student persistence. That initial consideration of the linkage between the allocation of resources and student persistence evolved into the present exploration of dimensions of the organization that influence the allocation of financial resources. The following provides background for and explanation of that evolution in the focus of this research.

Allocation of Financial Resources

Study of the manner with which financial resources are allocated requires foundational knowledge of the factors that influence the cost of higher education and the financial structure of colleges and universities. In addition, familiarity with the current state of research on the allocation of resources within higher education will provide a meaningful foundation for this study.

The Cost of Higher Education

A question implied by the focus on the cost of higher education is whether the costs of a postsecondary education are justified on the basis of outcomes. It also encourages an examination of how to contain the costs of higher education. Powell, Gilleland and Pearson (2012) noted that, for much of its history, higher education had been considered a public good. Consequently, they proposed, it had been allowed broad latitude in terms of operating costs, and it remained largely unquestioned about outcomes derived from its resources. Powel et al. noted that the unfettered status of higher education began to change in the 1990s, and that it became subject to wholesale scrutiny and pointed criticism at the time of the Spellings Commission in 2006. That scrutiny raised heightened determination among lawmakers, regulators, and constituents of higher education to achieve appropriate balance among the costs, accountability and outcomes associated with colleges and universities. That determination carried with it multiple presumptions. The first was that inefficiencies exist in the manner with which financial resources are used to produce outcomes in higher education. A related supposition was that it is possible to allocate financial resources in a manner that will effectively maximize outcomes per dollar spent. A third conjecture was that correlation exists between the manner with which financial resources are allocated in higher education and the outcomes produced.

A complex set of factors influences the cost of higher education and serve as the bases for the continuing increase in the cost of attendance. Johnstone (2002) identifies the following as predominant factors responsible for the rapid growth in the cost of higher education: the large proportion of relatively costly labor consumed by colleges

and universities as well as the expense of specialized equipment, technology and library materials. Dickeson (2005) concurs that higher education is a highly labor-intensive industry. He suggests that as much as 80% of the operating costs of postsecondary institutions are comprised of labor-related costs. Those include salaries and wages, health insurance and other benefits. Premium salaries are often paid to recruit faculty in highly sought-after subject areas. Tangentially related to personnel costs, large outlays of capital are regularly spent to equip laboratories for newly-hired faculty in the sciences (Moore & Amey, 1993). The practice of tenure also limits the ability of institutions to respond to academic program shifts or to remove ineffective faculty members from the academy (Dickeson, 2005).

Another factor contributing to the growing cost of higher education is the ever-expanding nature of regulation (Carlson, 2014). The activities of colleges and universities are highly regulated. Two prominent statutes commanding time and resources for compliance are Title IX, the civil-rights law pertaining to gender equity, and the Clery Act mandating recordkeeping and reporting related to public safety and crime on college campuses. Institutions bear the cost of other unfunded mandates, as well, regarding such matters as the administration of financial aid, the conduct of research, and an array of reporting requirements. Services provided by most colleges and universities such as food services, health care, student housing, child-care or counseling also carry related regulatory or licensure costs.

Inefficiencies inherent in the delivery of post-secondary education add to the cost of higher education. Unlike businesses, colleges and universities, by function, do not operate for efficiency. Rather, many institutions are supported by expansive

infrastructures in the form of laboratories, auditoriums, sports complexes, libraries, and technology that are not consistently used to capacity but that, nonetheless, require regular upkeep and maintenance. Contributing to further inefficiency, programs are sometimes added to the portfolio of institutional offerings as a matter of academic imperative without offsetting reductions in other areas (Ehrenberg, 2003; Ehrenberg and Rizzo, 2004).

Ehrenberg (2003) identified other factors contribute to the costliness of higher education. Those include student demand for educational offerings and institutional amenities that, although expensive, institutional leaders feel the need to provide in order to effectively compete for incoming students. On many campuses aging physical plants require increasing portions of the financial resources of colleges and universities to maintain and improve. The cost of higher education is additionally influenced by unpredictable increments in the price of essential goods consumed by colleges and universities such as energy, library subscriptions, unique educational supplies and materials, and specialized equipment; and the cost of those essential goods is commonly unconstrained due to the lack of reasonable substitutes. Unrelated to the underlying “costs of doing business” over which colleges and universities exercise limited control, another factor boosting the cost of attendance has been the willingness of students and their families, exploited by colleges and universities, to stretch the limits of their financial resources to enroll in institutions for which they perceive there are few reasonable substitutes.

The cost of higher education is also influenced by changes on the revenue side of the equation for funding colleges and universities. Decrements, or restricted growth, in

non-tuition sources of income such as endowment income, gifts and grants, contracts or income from auxiliary services place pressure on colleges and universities to increase tuition. Indeed, the debilitating impact of the economic turmoil of 2008 to 2009 on college and university endowments placed extraordinary financial strain on institutions (Webb, 2014). In an era of sharp criticism of the high cost of higher education, rather than raise tuition in response to the precipitous decline in support from endowments, institutions perceived to be highly prestigious and once considered to be the most financially sound implemented deep budget cuts, closings of academic programs and layoffs in personnel (Brown & Hoxby, 2014; Johnson, 2014).

In a similar regard, public institutions historically relied heavily on state funding to augment income from student tuition and fees. Even before the most recent economic downturn, many states confronted budgetary short-falls or structural deficits that resulted in reduced allocations to higher education (Miller & Oldham, 2005). The faltering of the economy that began in 2008 exacerbated the challenge of state funding for higher education. As state support for public higher education further declined, tuition and fees at state institutions rose at unprecedented rates (Johnson, 2014).

In the most elementary sense, the operational funding of colleges and universities is based on the simple premise that expenditures will be equal to or less than the revenues received by the institutions on an annual basis. A simplistic perspective presented by Bowen (1980) suggests that institutions strive to maximize the money garnered from all sources and then spend all the money on endeavors deemed to have merit. For publicly-funded institutions, state allocations are typically based upon student enrollment, current costs and inflationary increases (Hossler, 2004; McKeown, 1996). The state allocations

are also influenced by other competing demands for funding within the state. At private institutions, tuition rates are typically set on the basis of student enrollment and the cost structure of the institution net of income received from external sources, including federal and state governments, philanthropic giving and total return on investment of the endowment. Whether public or private, institutions struggle to contain expenditures within available revenue and endeavor to make the most efficient use of financial resources through strict budgeting. Johnstone (2002) described “an unrelenting worsening of financial conditions” (p. 18) in higher education. He proposed that this condition of “financial austerity” was a consequence of the long-term rate of increases in the cost of higher education outpacing the increases in revenue.

Storberg-Walker and Torracco (2004) underscored concern for the mismatch between increases in the costs and increases in revenues of higher education by noting that state appropriations for higher education as a percentage of total revenue for public institutions dropped by almost 25% over a recent 20-year period. During that same period of time enrollment in higher education continued to increase and tuition for full-time students net of financial aid grew by more than 60%. Ehrenberg and Rizzo (2004) similarly reported that for the past quarter century the mean annual increment in undergraduate tuition and fees has exceeded the annual growth in inflation by between 2.5 and 3.5 percentage points. More recently, The College Board (2017) reported general continuation of that trend, noting that, over the five-year period ending with the 2017/18 academic year, tuition and fees at private, nonprofit institutions rose 13%. The rise in tuition and fees at public two- and four-year institutions during that same period was less at 8%, on average.

Assessing Financial Condition

Benjamin and Carroll (1998) observed that postsecondary institutions across the nation face extraordinary fiscal challenges. The factors underlying those challenges include, but are not limited to increasing rates of participation in postsecondary education, declines in state appropriations for public higher education, the cost of federal mandates imposed on colleges and university, increases in the use of institutional funds for financial aid, the need to address backlogs of deferred maintenance associated with aging physical plants, the cost of computing and specialized equipment, increasing costs for insurance and extraordinary growth in utilities costs. Benjamin and Carroll added that, in order for higher education to respond effectively to those challenges, it is imperative that colleges and universities have the capacity to reallocate finite resources across competing demands for those funds. They concluded that, “Unfortunately, higher education does not have a good track record in this area” (p. 93).

Toward the end of making better use of resources, Massy (1975) brought early attention to the planning for the strategic use of financial resources in higher education. He described the application of comprehensive long-term planning models that were based on pertinent economic measures associated with enrollment, tuition rates, endowment spending rate and other aspects of budget development. He posited that an essential element in the management of postsecondary institutions was utilization and preservation of finite resources in a manner that balanced the immediate needs of the institution against the requirement to provide for the long-term existence and success of the institution, a condition referred to as “financial equilibrium.” Massy cautioned

against the tendency to allocate resources in a manner that was solely oriented toward alleviating immediate pressure on institutions.

In 1981, Hopkins and Massy elaborated further on planning and the allocation of resources in an overview of ten years of research completed at the University of California, Berkley and Stanford University as well as the work of others. They described the potential efficacy of comprehensive mathematically-based models in the management of colleges and universities in the preparation of budget projections, cost analyses, endowment management and policies regarding the allocation of human resources. Massy and others expanded upon the utility of the principle of financial equilibrium in higher education administration in such areas as enrollment management (Lolli, 1986), the relationship between strategic and operational planning (Napora, 1986), the allocation of faculty positions (Stewart and Edward, 1986), student loan policy (Smith, 1986), the upkeep and maintenance of the physical plant (Dunn, 1988) and strategic financial and endowment management (Taylor, Hewins, & Massy, 1997).

Taking the long-term, comprehensive perspective assumed by the principle of financial equilibrium, Scott (1994) at Harvard University modified the financial statements of that institution to better answer the question, “Did we have a good financial year?” The balance sheets and statements of operation were revised in a manner that would render them more readable, properly represent the cost of the depreciation of physical assets and account for the impact of inflation. With those changes Scott expressed greater confidence in concluding, “We had a good year if, with all expenses accrued and after inflation, net assets have grown sufficiently to support actual and planned program improvements” (p. 24). Winston (1994) recommends the adoption of a

similar perspective in his suggestion of “global budgeting” which incorporates an assessment of how much money the institution realized from all sources, how the money was used and the effect that those uses had on the real wealth—both financial and physical wealth—of the institution.

Garvin (1980) examined the allocation of institutional resources from a novel economical perspective. He premised his study on the notion that administrators and faculty alike are motivated by prestige maximization. He offered that that motive served as the basis for allocating resources within the institution and that the patterns for allocating resources for prestige improvement were different by institutional type. Garvin also found that disciplines of study could be differentiated in terms of cost factors. The popularity of Total Quality Management (TQM) and Business Process Redesign (BPR) of the 1980’s and 1990’s provided new means for articulating the allocation and management of resources in organizations. TQM and BPR became common on campuses during that era as financial challenges grew (Rush, 1994). As a predecessor to more intense focus on the outcomes of education, TQM and BPR brought attention to objectively measuring the processes by which “customers” were provided goods and services. An essential element of TQM and BPR was benchmarking, or the practice of measuring process outcomes against relevant points of references.

Early illustrations of benchmarking as a means for distinguishing among institutions on the basis of cost factors were found in the work of Bowen (1980, 1981). While at Claremont Graduate School he evaluated the educational costs per student at an array of colleges and universities. His studies showed a wide range in the cost per

student even when controlling for differences of institutional type, suggesting a need to examine more carefully the financial structure of higher education.

Another example of early benchmarking was the work at Boston College. Gaffney studied the allocation of costs across academic departments in terms of instruction and research to determine costs per credit hour by discipline. The results of that research served as the basis for objectively deliberating the need for expanding or retracting the number of course offerings, and for evaluating departmental requests for additional faculty members. Others also found application for benchmarking in higher education, but those uses tended to continue to focus more on processes than on outcomes (Shafer & Coate, 1992).

A variety of studies have been conducted of the cost functions of colleges and universities, focusing on economies of scale. The term, economies of scale, describes the cost advantage that accrues through increased production by spreading the costs, particularly fixed costs, across an increasing number of units produced. When fixed costs remain constant and/or variable costs increase at a rate less than the rate of increase in units produced, the cost per unit declines as the scope of production increases. To the extent that certain costs do not increase (or decrease) directly with certain increases (or declines) in enrollment, economies of scale can be found in colleges and universities, differentially advantaging some institutions over others.

Economies of scale have been examined in a diversity of institutional types including research universities (de Groot, McMahon & Volkwein, 1991), comprehensive colleges (Koshal & Koshal, 1999) and Bible colleges (Koshal, Koshal & Gupta, 2001). Koshal, Koshal and Gupta (2001) noted that the topic of economies of scale in higher

education had been the subject of research for over 50 years, with mixed results. They attribute those conflicting findings to the type of model (single-output versus multi-output) used to assess efficiencies, differences in institutional type and quality, the false assumption that all institutions share common educational objectives and faulty assumptions in the underlying statistics. The common element typical of these studies, however, is an attempt to determine what logical relationship exists between the utilization of institutional resources and outcomes.

Beyond simple economies of scale, in an analysis of efficiency in English higher education, Johnes (2006) employed data envelopment analysis to evaluate the relationship between multiple inputs and multiple outputs. She states that “the quantity and quality of undergraduates, the quantity of postgraduates, expenditures on administration, and the value of interest payments and depreciation are significant inputs to, and the quantity and quality of undergraduate degrees, the quantity of postgraduate degrees and research are significant outputs in the English higher education production process” (p. 273). Johnes used those findings to classify institutions into three distinct groups, but found no significant differences among the groups. Johnes observed, however, significant differences between the most and least efficient institutions, suggesting modest potential for the ability to distinguish institutions on the basis of some form of production function.

Agasisti and Johnes (2015) reflected on the state of research about cost efficiency in higher education. They made the observation based on that body of work that, motivated by competition within a realm of limited resources, colleges and universities tended to specialize. By logical extension, they concluded that, because of specialization,

an array of institutional cost structures must exist within higher education. As an example of that conclusion, they cited research by Harter, Wade and Watkins (2005) that revealed that the mean cost of education per full-time equivalent student in a large sample of institutions in 1989 ranged from \$8,144 at comprehensive public institutions without medical schools to \$17,538 at research universities with medical schools. Agasisti and Johnes suggested that such heterogeneity within higher education warranted deliberate consideration of scope and scale of operation in the assessment of financial efficiency within and across institutions, and in the development of policies regarding funding for higher education.

Lewis and Dunbar (2001), in a discussion of costs and productivity in higher education, observed that the influence of resource utilization on institutional quality prompted increased public debate about and scrutiny of colleges and universities. They posited that this focus on greater accountability and productivity stimulated new interest in the establishment and application of performance indicators to monitor public investment in higher education and to produce improvements in internal efficiency. One element of that efficiency model proposed by Lewis and Dunbar that is of specific relevance to this study was the effectiveness with which institutional resources are deployed to produce the intended outcomes of the postsecondary educational process.

Outcomes and Allocation of Institutional Resources

Becker's (1964) exploration of the influence of higher education on human capital served as the foundation for a subsequent body of study of outcomes associated with higher education. Becker offered the perspective that a return could be calculated to the

investment in a person in a manner that was comparable to the determination of a rate of return from the investment in other physical assets. Through the use of census data, Becker estimated an individual rate of return to graduation from college that provided sound economic evidence of the value of higher education.

Contemporaneous to Becker's initial presentation of the notion of human capital, work of a different type supported the premise of a value returned by investment in education. Denison (1962), endeavoring to assess the relationship between the inputs of labor, land and capital to the national product, found a discrepancy between the inputs and outputs. He attributed the variance to the enhancement of the labor force arising from education. Expanding upon the work of Becker, Denison and others, Hoxby (2001) assessed the monetary return to graduates of selective institutions relative to graduates of other institutions. She concluded that not only do graduates of colleges and universities enjoy greater lifetime earnings than non-graduates, but that there were also differences between graduates of selective institutions and others graduates. Even controlling for student aptitude as measured by SAT scores, graduates of selective colleges and universities were found to have the advantage over other graduates in terms of estimated lifetime earnings.

The study of the outputs or outcomes of higher education has not been limited to assessments of the earnings potential of graduates. In 1970, the Western Interstate Commission for Higher Education (WICHE), the American Council on Education (ACE) and the Center for Research and Development in Higher Education (CRDHE) cosponsored a conference entitled, "The Outputs of Higher Education: Their Identification, Measurement, and Evaluation," to discuss means for categorizing and

assessing the outputs of higher education. The result of the conference was a cataloging of outputs into four classifications: instructional outputs, institutional environment outputs, research outputs, and public service outputs (Breneman, 2001). The 1970s was a period of increased research in the “investment concept” of higher education that contemplated the relationship between an investment in higher education and educational outcomes, including less-tangible outcomes that had not typically been considered as direct consequences of higher education (Alexander, 1976). Also appearing during this time was work by Bowen (1977) in which he provided his own elaboration on the benefits of higher education. Those benefits included “personal self-discovery; psychological wellbeing; values and morals; refinement of taste, conduct and manner; health; preservation of cultural heritage” (pp. 55-59).

The broadened perspectives on the outcomes of higher education during the 1970s encouraged a new emphasis on performance in higher education. Christal (1997) reported that common performance indicators from that era included retention and graduation rates, transfer rates, faculty workload, remediation activities and their effectiveness, degrees awarded, job placements, admission standards, enrollment trends, racial diversity among students and faculty, and time-to-degree.

Within the realm of research on the benefits or outcomes of higher education, limited understanding exists of the relationship between the allocation of financial resources at colleges and universities and the outcomes of those institutions. Three broad areas of focus are found in study of the use of financial resources in higher education: (a) the impact of financial resources on general institutional performance, (b) the relationship between the allocation of financial resources on student-related factors such as

satisfaction, engagement and intellectual growth, and (c) the correspondence of the allocation of financial resources on rates of graduation and student persistence. These areas of study, however, are not mutually exclusive. Individual research can incorporate some combination of all three areas.

Institutional Performance

In an early study of price and quality in higher education, Gilmore and Price (1991) examined two questions: (a) “Does high price assure high quality?” and (b) “Does college cost affect student outcomes?” In a study of data from 593 private liberal arts colleges from the 1985/86 academic year the researchers found a significant, positive correlation between tuition and 27 of 29 institutional indicators. While the results supported the relationship between high price and high quality, Gilmore and Price observed that, in many areas, lesser priced institutions outperformed higher-priced colleges and universities.

Thompson and Riggs (2000) examined the relationship between the allocation of funding to functional expenditure categories and institutional performance at the 14 community colleges in the State of Tennessee. Tennessee was the first state in the union to establish standards for performance funding for community colleges. The researchers analyzed the correlation between the percentage of revenue spent in each functional category and individual and aggregated performance scores for the two-year colleges. The study revealed a correlation between certain expenditure categories and performance standard scores, with the higher performing colleges devoting a larger proportion of

institutional resources to instruction and academic support than the lower performing institutions.

In a study of British higher education, Belfield and Thomas (2000) evaluated the relationship between institutional performance and resource levels. The researchers studied 190 general colleges, universities and graduate schools, and assessed performance during the 1994/95 academic year on the basis of institutional grading conducted by the British Further Education Funding Council (FEFC). The results of the study suggested the benefits of economies of scale, with a statistically significant relationship between levels of performance associated with levels of aggregate expenditure. The research failed to show, however, a significant correlation between performance and allocation of resources within the institution. Proportion of spending on direct teaching, for example, was not found to be related to level of performance as assessed by the FEFC. The researchers also reported inconclusive results regarding the relationship between expenditures per student and particular institutional performance. Belfield and Thomas concluded that “Empirical understanding of the production function [in higher education] remains limited and we cannot conclude that greater unit resources will lead to higher outcomes” (p. 249).

In a departure from the more common practice of assessing quality of colleges and universities on the basis of such measures as institutional resources or reputation, Hayek (2001) examined whether a student-centered approach could be employed to identify high-performing colleges and universities. Based on a study of 106 four-year colleges and universities, Hayek observed that data regarding the student-centered orientation of colleges and universities served as a valuable alternative metric for

appraising institutional performance. Germaine to this consideration of the allocation of financial resources and outcomes in higher education, Hayek also examined the relationship between functional expenditures and institutional performance. He found a strong correlation between high performance and expenditures for scholarship, student services and institutional support, but noted that, in the presence of additional variables in a multiple regression model, those expenditures did not represent statistically significant predictors of institutional performance. Hayek concluded that neither extensive institutional resources nor high prestige were required for colleges and universities to achieve high performance status in a student-centered context.

Gansemer-Topf, Saunders, Schuh and Shelley (2004) evaluated the relationship between spending and student learning at institutions participating in the Documenting Effective Educational Practices (DEEP) study. DEEP schools are those found to have higher graduation rates and scores on the National Survey of Student Engagement (NSSE). The work was an expansion upon an earlier study by Gansemer-Topf and Schuh (2004) that found a distinct relationship between resource allocation and graduation rates at independent, baccalaureate colleges. The work by Gansemer-Topf, et al. sought to determine whether DEEP institutions differed from non-DEEP colleges and universities in terms of institutional characteristics, spending per student in functional expenditure categories and relative allocation of the financial resources of the institution. The researchers found that, in large measure, the DEEP institutions did not differ significantly from non-DEEP institutions in terms of institutional characteristics, amount of spending per student or the proportionate manner by which financial resources were allocated to functional categories. The researchers consequently concluded that decisions and

practices within DEEP institutions, except those related to resource allocation, served to distinguish those colleges and universities from non-DEEP institutions.

Prompted by what he perceived as an increase in performance-based accountability in higher education that began in the 1990s, Shin (2010) looked for evidence of corresponding improvements in performance at colleges and universities. He examined changes in performance over an 11-year period at 467 public institutions in states that had adopted performance-based accountability programs. He assessed performance on the basis of the two predominant functions of colleges and universities: teaching and research. Six-year graduation rates served as the metric for teaching performance, and the value of federal research grants received as the indicator for research performance. The results of the study failed to confirm institutional performance improved as consequence of performance-based accountability measures. In an evaluation of the results, Shin questioned the influence of two factors on the apparent lack of improvements in performance. The first was the failure of states that adopted performance-based accountability to extend to leaders at colleges and universities sufficient flexibility to initiate operational changes. The second was the maintenance of rigid regulatory and procedural frameworks that constrained institutional agility.

A comprehensive review by Dougherty, Jones, Lahr, Natow, Pheatt and Reddy (2014) of 60 studies provided broad insight on the relationship between funding and institutional performance. As a point of distinction between this body of research and studies cited above, the analysis of Dougherty et al. pertained to the effects derived from state-sponsored performance-based funding programs for public colleges and

universities. Consequently, the basis of improvement in institutional performance summarized by Dougherty et al. may have been motivated by the prospect of receiving increased funding as a reward for improved performance rather than the result of prior investment funds.

With the foregoing caveat, the studies reviewed by Dougherty et al. revealed that performance funding influenced positive changes within colleges and universities as determined by metrics inherent in the various funding programs. Institutions engaged in proactive measures to either enhance or deliberately close academic programs with low rates of graduation or poor career-placement records; and courses of study were evaluated and, as necessary, modified to streamline the trajectory to and time required for graduation. Performance funding also resulted in revisions in registration procedures, advising, student counseling, programs for retention, and financial assistance.

Dougherty et al. did not affirm that student persistence and graduation rates improved as a consequence of performance-based funding. The influence for any observed improvement was clouded by the potential that other factors contributed to the improvement: increased admissions selectivity, modifications in tuition rates, changes to state-sponsored scholarship programs, or directives from accreditation agencies. Dougherty et al. also attributed unintended consequences to the practice of performance-based funding. Those included tendencies to grade inflation, selected decrements in academic rigor and, as cited above, diminished access to postsecondary attendance due to heightened admissions standards.

Student-Related Outcomes

Astin (1993a, 1993b) studied more than 200 four-year colleges and universities and approximately 25,000 students who were part of the Cooperative Institutional Research Program, a longitudinal study of students and institutions administered by the Higher Education Research Institute of the University of California – Los Angeles. His research, covering the academic years 1985 to 1989, served as a comprehensive assessment of the impact of a broad array of college characteristics on a wide range of student outcomes. Among the findings, Astin observed that student satisfaction and degree completion were both positively influenced by institutional spending on student services and expenditures for instruction. Based on the results of the study, however, he concluded that “investment in student services is a more critical environmental factor than the investment on instruction” (1993b, p. 331) in impacting those particular outcomes.

Smart, Ethington, Riggs and Thompson (2002) proposed that little attention had been afforded to patterns of expenditures in higher education when studying the contribution of colleges and universities to student development and intellectual growth. They examined that relationship in a study of 2,410 students attending more than 300 colleges and universities. Relying on survey data obtained from the students at the commencement of their freshman year of study in 1986 and in the winter of 1990, Smart, et al., assessed the effect of the pattern of functional expenditures on student leadership ability. The researchers found a significant negative correlation between the percentage of total expenditures devoted to instruction and the development of student leadership ability. In contrast, the study revealed a significant positive relationship between the

proportion of total expenditures for student services and improvement in student leadership ability over the four-year period. Smart, et al., observed, however, that the effects of the percentage of total expenditures on instruction and student services was largely indirect, mediated by student perceptions of the extent of institutional support for student development and the extent to which the students took part in leadership programs. The researchers concluded that the changes in student leadership abilities, as reported on the surveys, was a function of a complex interaction of individual student characteristics and institutional attributes including, but not limited to, institutional expenditure patterns.

Pike, Smart, Kuh and Hayek (2005) explored relationships between institutional expenditures and student engagement by examining two specific questions: how are different categories of institutional expenditures related to student engagement; and is there a difference between first-year and senior students on the basis of the relationship between institutional expenditures and student engagement? Four areas of findings emerged from their analysis of data from 321 colleges and universities. First, a complex relationship was found among expenditure types and student engagement, influenced by institutional type and student year in school. At public institutions, positive associations were found between expenditures for academic support and institutional support and four of the five student engagement measures for first-year students, but for only one of the measures of student engagement for seniors. Second, the data indicated lower measures of student engagement at doctoral-research institutions than at other institutional types. Third, the researchers found opposite relationships between socioeconomic status and student engagement at public versus private institutions, with high socioeconomic status

more likely to be associated with high student engagement at private institutions. Finally, based on self-report survey data from students, a correlation was not found between institutional spending and student perception of an affirming, supporting institutional environment.

Ryan (2005) built upon growing scholarly interest in student engagement. As a follow-up to an earlier study of the relationship between institutional expenditures and graduation rates (Ryan, 2004), he examined the relationship between various categories of institutional expenditures and student engagement. Utilizing a multiple regression model with student engagement as the dependent variable, Ryan examined institutional expenditure data from 142 institutions. He found an insignificant relationship between his measure of student engagement and institutional expenditures for instruction, academic support and student services. A statistically significant, negative correlation was found to exist between student engagement and institutional support (i.e., expenditures for “administration”). Ryan concluded that, while these findings did not support the hypothesis of a relationship between student engagement and institutional expenditures directly related to students, the results did indicate that student engagement was impacted by the allocation of institutional resources.

Pike, Smart, Kuh and Hayek (2006) observed that the limited number of studies of the relationship between expenditures in higher education and student outcomes produced contradictory results. They speculated that the inconsistency of the findings might be a function not only of the differing characteristics of students and institutions but also the intervening influence of student engagement. Pike, et al., examined the relationship between institutional expenditures and student engagement using a nationally

representative sample of colleges and universities whose students participated in the 2001 NSSE. The researchers highlighted four findings from their research. First, a complex relationship existed between expenditure patterns and student engagement that was influenced by a number of institutional and student-related variables. Second, level of student engagement varied with institutional type, with attendance at a doctoral-research university consistently associated with lower levels of student engagement. Third, an opposite relationship was found to exist between the overall socioeconomic status of the student body and student engagement was observed at public and private institutions, with higher student engagement among private colleges with more affluent students and at public institutions with less affluent student bodies. Finally, the researchers observed that financial structure was not a determining factor in influencing student engagement. Pike, et al., concluded that “whether students feel appreciated, understood, and nurtured is not something that a college or university can necessarily purchase with financial resources,” but, rather “may be more a function of institutional culture” (p. 866).

Pike, Kuh, McCormack, Ethington and Smart (2011) examined further the relationship between institutional expenditures and student learning outcomes. They considered, as well, the influence of institutional expenditures on student engagement, and the mediating effect that student engagement had on student learning. Learning outcomes were defined in terms of two categories of gains: those related to cognitive learning and development, and those that were of a non-cognitive nature. The cognitive learning category was comprised of nine factors including, for example, “acquiring a broad general education,” “writing clearly and effectively,” and “thinking critically and analytically.” Seven items comprised the non-cognitive category, exemplified by such

factors as “working effectively with others,” “understanding people of other racial and ethnic backgrounds,” and “developing a deepened sense of spirituality.” Student engagement was defined in terms of the following five groupings of additional factors: academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences and supportive campus environment.

In a further parsing of the relationships, direct and indirect, between institutional expenditures and student learning, the researchers also explored whether the nature of those relationships differed across institutions and by class standing. Unlike the earlier study by Pike, Smart, Kuh and Hayek (2006), Pike, Kuh, McCormack, Ethington and Smart (2011) did not assess the effect of institutional spending by individual functional categories. Instead, relationships between levels of spending and student outcomes were based on aggregate levels of expenditures for instruction, academic support, student services and institutional support.

The participants in the study were students who took part in the 2004 National Survey of Student Engagement (NSSE). The students comprised two groups—34,823 first-year students and 34,606 seniors—who were enrolled in 171 different institutions. In addition to student responses to the NSSE, the researchers drew upon institutional data from the Integrated Postsecondary Education Data System (IPEDS), Common Data Set (CDS) and the College Board.

The researchers found statistically significant differences among institutions in terms of student learning outcomes. They noted, however, that the differences between institutions were diminutive relative to the variance found between students within institutions. In terms of correlations between spending and measures of outcomes, the

only result of statistical significance was that between expenditures and cognitive outcomes for first-year students. Two of the five measures of student engagement—academic challenge and student-faculty interaction—exhibited a significant relationship to expenditures. That significance applied to both first-year students and seniors, although the relationship was stronger for first-year students.

For both first-year students and seniors, the researchers observed a robust relationship between the academic engagement variable of academic challenge and cognitive learning. Academic challenge and student-faculty interaction also shared significant relationships with non-cognitive learning. On the basis of the significant statistical relationship between academic challenge and both cognitive and non-cognitive learning, in combination with the significant relationship between levels of expenditures and academic challenge, Pike, et al., inferred a notable indirect relationship between expenditures and student outcomes. They further suggested that the mediating influence of student engagement (in this case represented by academic challenge), served to expand the influence, albeit indirectly, of levels of expenditures on student outcomes—both cognitive and non-cognitive. As a practical implication, Pike et al. proposed that their findings suggest that institutional policy makers may find merit in focusing spending on programs that enrich the student experience rather than those directly related to learning and persistence.

Graduation Rates and Student Persistence

Research by Gilmore and Price (1991) of the relationship between educational price and quality, cited above, implied an early perspective on the relationship between

financial resources and rates of graduation and persistence. The researchers evaluated institutional performance, as noted above, on the basis of a composite measure of student grade point averages, percentage of students advancing to sophomore status and graduation rates. Despite the strength of the correlation of student outcomes on price, student ability was found to be a more powerful predictor of student persistence and graduation rates than the price of the education.

Kim, Rhoades and Woodard (2003) focused on the relationship between sponsored research expenditures and student graduation rates. Contrary to a prevailing notion that resources—money and time—spent on sponsored research detracted from instruction and, by extension, student learning and graduation rates, in an analysis of data from 22 public research universities and nearly 60,000 students, Kim, et al., observed a significant positive linear relationship between expenditures for sponsored research and five-year graduation rates. Kim, et al., also examined the complex interrelationship of graduation rates and other intervening variables. At the institutional level, mean SAT score, used as a proxy for selectivity, was found to be a powerful predictor of graduation rates, and on the individual level gender served as a meaningful correlate of graduation levels (with women graduating at a higher rate than men).

Hamrick, Schuh and Shelley (2004) tested the plausibility of predicting undergraduate graduation rates on the basis of the allocation of financial resources and institutional characteristics such as selectivity and Carnegie classification. Their research was based on a sample of 444 public colleges and universities that awarded at least a baccalaureate degree in 1997. Among expenditure categories, instructional expenditures and library expenditures were found to be significant predictors of graduation rates. The

researchers noted several limitations to their research, but concluded that the results offered potential insights for better utilizing institutional resources and modifying institutional characteristics to foster student graduation.

Ryan (2004) conjectured that institutional culture, priorities and purposes influence the allocation of resources within the institution; that those allocation decisions impact institutional staffing, programming and services; that staffing, programming and services establish the culture of the institution; that culture determines the frequency and quality of experiences, interactions and involvement within the institution; and that those experiences, interactions and involvement influence persistence in education and degree attainment. Ryan tested the validity of his conjecture by examining patterns of expenditures at 363 Carnegie Baccalaureate I and II institutions. Ryan's findings lent general support to the hypothesis that institutional expenditures patterns affect student persistence and graduation rates. More specifically, the results of his study suggested that spending on instruction and academic support had significant impact on graduation rates; that student services expenditures do not have a significant influence on degree attainment; and that, since expenditures for institutional support did not correlate significantly with the studied outcomes, but expenditures for academic support did, all categories of administrative expenditures do not equally impact student outcomes. Ryan also noted that a positive relationship between institutional size and graduation rates implied a benefit from economies of scale.

Gansemer-Topf and Schuh (2006) expanded not only upon the work of Ryan (2004, 2005), but upon their own previous research (Gansemer-Topf, Saunders, Schuh and Shelley, 2005; Gansemer-Topf and Schuh, 2004) by including the factor of

selectivity into a study of the relationship between institutional expenditures and retention rates and narrowing their attention on private, baccalaureate-granting institutions. They speculated that if research were specifically focused on a particular institutional type, while introducing the element of selectivity, greater understanding could be found in the intricate relationship between institutional financial structure and student success.

Gansemer-Topf and Schuh premised their work on Berger's (2001-2002) concept of the impact of organizational behavior on student retention, and questioned the nature of the relationship between expenditures for instruction, academic support, student services, facilities, institutional support and student financial aid on retention and graduation rates. They observed, as well, the influence of institutional selectivity on that relationship. Gansemer-Topf and Schuh based their findings on data from 466 private colleges and universities within the Carnegie Foundation's classification of Baccalaureate Liberal and General institutions.

The researchers found a general relationship between functional expenditures and rates of retention and graduation with retention and graduation both varying directly with changes in either the amount or the percentage of expenditures devoted to specific functions. As exceptions to that general observation, however, the level of expenditure for institutional support did not directly impact graduation rates at low-selectivity institutions; no significant relationship was found between the percentage of expenditures for student financial aid and graduation rates at highly-selective institutions; and graduation rates were not affected by the percentage of expenditures for student services. They noted that expenditures for instruction served consistently as a positive predictor of

retention and graduation rates. Gansemer-Topf and Schuh concluded that their results supported the conceived relationship between organizational behavior, as represented in the decision to allocate institutional resources, and graduation and retention rates.

Germane to the notion inherent in this study of the complexity and perhaps indirect nature of the relationship between allocation of financial resources and student outcomes, they also identified institutional selectivity as a characteristic that might differentiate institutions in terms of how the allocation of resources influences retention and graduation.

Titus, in a pair of studies (2006a, 2006b), examined what he referred to as the “financial context” of institutions and its influence on student persistence. Relying on Bean’s (1990) attrition model that attributes student persistence to student-specific attributes and on the college-impact model of Berger and Milem (2000) that explains the influence of institutional characteristics on retention, Titus examined persistence from the perspective of resource dependence. Titus suggested that, under resource dependency theory, institutions in an environment of constrained resources are constantly striving for autonomy but are directly influenced by forces external to the institution. Organizational choice, he proposed, is based on the degree of flexibility that an institution finds within the context of those external forces. He further posited that institutions enjoying greater degrees of flexibility respond more actively to external changes with one response mode being the manner with which resources are allocated within the institution.

In the first study, Titus (2006a) examined student persistence on the basis of three classes of variables: (a) student-specific variables, (b) after controlling for student-level predictors, institutional revenue patterns, and (c) after accounting for student attributes,

patterns of expenditures. The data for the study were based on 4,951 students enrolled in 367 four-year colleges and universities who were participants in the 1996-1998 Beginning Postsecondary Students longitudinal survey conducted by the National Center for Educational Statistics. Titus found that certain student-specific and peer-group characteristics contributed to student persistence. With respect to resource dependency theory, the research demonstrated a correlation between persistence and dependence on tuition. Titus speculated that institutions with a higher reliance on tuition focused greater attention on the retention of students. Titus also noted that student persistence varied inversely with the percentage of expenditures devoted to administrative functions.

In the second study Titus (2006b) examined how institutional financial structure impacted persistence among low socio-economic status (SES) student relative to other students. The data for this study were drawn from the 1996-2001 Beginning Postsecondary Students Survey based on information from 5,776 representing 400 four-year institutions. The results describing the influence of SES on persistence were consistent with those of other research that show a direct correlation between SES and the likelihood of graduation. Titus also found that persistence was directly linked to the level of financial resources available to the institution whether measured in terms of tuition revenue as a percentage of total revenue or amount of educational and general expenditures per full-time equivalent student. The research also revealed that low SES students were disproportionately enrolled at institutions with lower financial resources and a higher degree of reliance on tuition revenue.

Fowles (2008), noting the well-developed body of research describing the relationship between expenditures and student outcomes at the primary and secondary

educational levels, suggested that, by comparison, the study of the impact of expenditures on student outcomes at postsecondary institutions was notably less extensive. Further, he posited that such studies within higher education yielded contradictory results. Fowles endeavored to expand upon previous research by testing a predictive model of the effect of expenditures on student graduation rates that included a wider complement of institutional and student characteristic than used in previous studies. In addition, he assessed the effects of a broader array of expenditure categories. He reasoned that the inclusion of the additional variables in the regression model would provide better means to control for the effect of factors not considered in earlier research.

Fowles analyzed expenditures and graduation rates from 278 public, four-year colleges and universities. The result of his study revealed a strong, statistically significant relationship between institutional expenditures, in the aggregate, and graduation rates after controlling for pertinent institutional and student attributes; but Fowles reported differing levels of influence on graduation rates among the expenditure variables. He specifically noted a statistically significant, positive relationship between expenditures for instruction and institutional support with graduation rates, and a negative, significant correlation between expenditures for public service and rates of graduation. Fowles concluded that his results corroborated the general notion that student outcomes, specifically graduation rates are impacted by institutional expenditures. Observing that his results differed in some respects from those of other research in higher education, Fowles speculated that perhaps the manner with which funds are spent had greater impact on outcomes than the amount of money allocated for given purposes.

Webber and Ehrenberg (2010) questioned the influence of differing levels of functional expenditures on graduation and persistence rates, specifically those in functional categories other than instructions. The researchers observed that, over a 20-year period, in the aggregate, the rate of growth in expenditures for instruction per student was less than the rate of increase on a per-student basis for other functional categories. Applying econometric modeling to financial data from 1,161 institutions over a three-year period they evaluated the marginal contribution of non-instruction expenditures on rates of graduation and persistence. Webber and Ehrenberg concluded that most notable among their results was the finding of a positive impact of increased expenditures for student services on both graduation and persistence rates. They noted that the effect was more prominent on graduation, rather than persistence, rates.

Webber and Ehrenberg additionally pointed to the interactive nature of variables—both institutional and student-related—impinging on rates of graduation and persistence. They highlighted among their findings that the impact of student services expenditures on graduation and persistence rates was higher among institutions with lower entrance exam scores and higher per-capita Pell Grants. They speculated on the basis of their econometric models that the improvements in graduation and persistence rates could be particularly magnified at those institutions by increases in student services expenditures.

Gansemer-Topf, Downey, Thompson and Genschel (2018) utilized the experience of the Great Recession, from 2007-2009, to gain unique insight into the effect of significant economic stress on the financial vitality of colleges and universities as determined by changes in enrollment, and the economic effect on sources of and demands

on revenue. They also analyzed how the fiscal response of the higher education sector to the recession affected the relationship between the allocation of financial resources and student persistence.

To explore those questions, Gansemer-Topf et al. examined financial and institutional information from 831 private, not-for-profit institutions and 473 public, not-for-profit institutions at three points in time: 2007, prior to the recession, 2008, during the height of the recession, and 2011, two years following the recession. Non-financial data incorporated in the study included levels of staffing and selectivity in admission. At the commencement of the recession, institutions were profoundly affected by declines in state appropriations to public colleges and universities and precipitous declines in revenue from investments, but were expected, nonetheless, to maintain the quality of instruction and services to which students were accustomed. In addition, many families of students struggled with their tuition and fees obligations.

Analysis of the data revealed that tuition revenue increase from 2007 to 2011, but state appropriations and investment income declined in 2009 as a consequence of the recession. Institutional spending increased both during and following the recession, but, with the exception of academic support at both types of institutions, and instruction, student services and net increases in grants at public institution, those increases were not statistically significant. Overall levels of staffing remained essentially unchanged over the period of study.

In the whole, from 2007 to 2011, Gansemer-Topf et al. noted that institutions raised tuition rates and maintained levels of enrollment, but they found differences in those regards based on institution type and selectivity. Baccalaureate institutions saw

retention decline over this time, and institutions with more-selective admissions standards were more likely to experience increases in enrollment and retention.

With specific regard to expenditures for academic support, as noted above, for both types of institutions, those increased significantly from 2007 to 2011. Ironically, and contrary to results commonly found in studies of the relationship between the allocation of resources and retention, these significant increases in academic support expenditures were inversely correlated with retention. In the absence of specific data pertaining to this phenomenon, Gansemer-Topf et al. conjectured that this unanticipated increase in academic support spending may have occurred in response to needs of students—financial and otherwise—precipitated by the recession. They further speculated that the incremental spending for academic support may have been accommodated by limiting the increases of financial support for instruction.

Gansemer-Topf concluded that the responses of colleges and universities to the exigency of the recession, and the results experienced in consequence, reflected typically-observed relationships: rates of retention commonly vary with institutional selectivity, expenditures in colleges and universities typically rise, and expenditures that are more directly related to student success possess a greater likelihood of positively influencing retention than those that are less directly related. The researcher took special note from these results that those relationships appeared to remain stable even during times of economic stress.

Conclusion

Contradictory results emerge from this review of literature describing the impact of either financial structure or the allocation of financial resources in colleges and universities on student outcomes. The results of these several studies hint at a relationship, but any reliability in that relationship is lost in the inconsistencies of the findings. The contradictory nature of these differences is not unexpected considering the relatively small body of research on the linkage between the financial operations and student outcomes. Finding uniform commonalities in the research is additionally confounded by the distinct differences that exist among the studies in terms of research design and methodology.

An examination of the institutions and students that are the subjects of these studies reveals a large measure of heterogeneity, both within studies and across studies. In many cases the sample set of institutions is broadly delineated as four-year colleges and universities (Hayek, 2001; Smart, Ethington, Riggs & Thompson, 2002; Pike, Smart, Kuh, & Hayek, 2005, 2006; and Titus, 2006a, 2006b). The diversity of characteristics in such a wide cross section of institutions provides ample opportunity for the results to be differentially influenced by the array of institutional attributes present in the study, explaining at least in part some of the disagreement in the results. Other researchers endeavored to narrow their institutional focus to public institutions (Kim, Rhoades & Woodward, 2003; Hamrick, Schuh & Shelley, 2004; and Fowles, 2008), but those still constitute an assorted group of colleges and universities. Still others selected more narrowly-defined classes of institutions, such as Baccalaureate I institutions (Ryan, 2004) or private, baccalaureate liberal and general college (Gansemer-Topf & Shuh, 2006), but

those categories were also so general as to only moderately diminish the diversity among the institutions. In contrast, other studies focused so narrowly on such distinct cohorts as community colleges in Texas (Thompson & Riggs, 2000) British institutions (Belfield & Thomas, 2000) or colleges that were participants in the Documenting Effective Educational Practices (DEEP) survey (Gansemer-Topf, Saunders, Schuh & Shelly, 2004) that no similar studies exist to serve as points of reference in corroborating results.

The selection of variables in the studies reviewed here represents a second dimension on which differences were found that could explain the inconsistent nature of the findings. While the majority of the studies used some variation of expenditures by functional category—either in absolute dollar terms, spending per student or as a percentage of total spending—as the independent variable, other studies introduced such institutional characteristics as level of sponsored research (Kim, Rhoades, & Woodward, 2003) or tuition dependence (Titus, 2006a) as alternative independent variables. Other studies considered the impact of intervening variables such as institutional selectivity (Gansemer-Topf & Schuh, 2006) or student socioeconomic status (Titus, 2006b) on the relationship between spending and student outcomes.

Marked variation is also evident among the studies in terms of the student outcomes that were observed. The majority of the studies assessed graduation rates and retention or persistence to graduation as the pertinent outcomes influenced by the selected independent variables. Other studies, however, measured the impact of institutional spending or financial resources on different outcomes including institutional performance scores (Thompson & Riggs, 2000), the extent to which the institutions exhibited a student-centered orientation (Hayek, 2001), the acquisition of student leadership skills

(Smart, Ethington, Riggs & Thompson, 2002) and student engagement (Pike, Smart, Kuh, & Hayek, 2005, 2006; and Ryan, 2005).

Habley and McClanahan (2004) recommended focusing on the nexus of student and institutional characteristics. The merit of their suggestion seems borne out by the evidence in studies reviewed here of an intricate interrelationship between student and institutional variables (Smart, Ethington, Riggs & Thompson, 2002; Kim, Rhoades & Woodward, 2003; Pike, Smart, Kuh & Hayek, 2005, 2006). From a similar perspective, Titus (2006a) recognized the utility of relying on student-specific experiences to explain persistence in higher education. Student persistence is influenced, he argued, by the myriad of college experiences including the level of success in academic pursuits, the act of declaring a major, whether students live on or off campus, and the extent of general involvement in the college milieu. When exploring the relationship between allocation of resources and student outcomes Ryan (2004) additionally urged consideration and control of such extraneous variables as academic preparation, gender, ethnicity, age, size of the institution, institutional affiliation and institutional control that could influence the results.

The contradictions found in the results of these studies emphasize the need to disentangle the complex interrelatedness of the accumulation and allocation of institutional resources with institutional programs and attributes. The presumed capacity of institutions to influence student outcomes by means of the allocation of resources presupposes that deliberate decisions have been made and particular actions taken to facilitate those outcomes; but student outcomes might not have been the result of deliberate decisions and actions linking outcomes with the allocation of resources.

Rather, the sheer financial vitality of wealthy institutions may allow the leveraging of resources in a manner that contributes to positive student outcomes irrespective of decisions regarding how those resources are allocated.

Other factors may be at play, too. Winston (1999), for example, posited that a powerful, direct relationship exists between institutional selectivity and financial resources, raising the question of whether the financial strength of the institution contributed to successful student outcomes or if the positive outcomes were a consequence of the high academic potential among students at selective institutions. As another perspective, Smart, et al. (2002) who studied the relationship between resource allocation and student leadership speculated that the results observed in studies of the linkage between the allocation of resources and student outcome may be a consequence of student perspective regarding the allocation of resources, rather than the actual impact achieved by the allocation of resources. They offered the example of institutions that spend a disproportionately higher amount of money on student services than other institutions and suggested that students at such colleges or universities may perceive their institutions placing a higher priority on student services and, by extension, those students may participate more actively in student-related programs including those that enhance student-leadership skills.

Dowd (2007), advocating for new means for drawing upon accreditation and assessment systems to fulfill accountability goals, identified two principal limitations in current systems that were intended to link results and accountability. The first was the absence of a definitive approach for discovering effective linkages between institutional practices and student outcomes. The second was the deficiency of a mechanism for

encouraging faculty and administrators to implement what might be considered best practices in higher education for directing impact to student outcomes. Both points made by Dowd point to the importance of this current research: to better understand the dynamic relationship among facets of the institution and the association of that interplay with student outcomes.

CHAPTER 3

CONCEPTUAL FRAMEWORK AND RESEARCH DESIGN

Conceptual Framework

As described in the previous chapter, study of the relationship between the allocation of financial resources in colleges and universities and student outcomes has yielded contradictory results. Those contradictions may be explained, in part, by variability across studies in terms of key institutional characteristics and in the types of outcomes measured. Yet, as illustrated in the foregoing review of the limited body of research on the relationship between the allocation of resources and student outcomes, even when comparing the results of studies based on institutions of similar character, and when assessing common types of outcomes, contradictions persist. The present study is premised on the notion that those contradictory findings are attributable to factors that may be unidentified or not well studied. One such factor which is the focus of this study is organizational behavior, and how it is manifest in the allocation of financial resources.

Three decades ago Baird (1988) declared that “the interactive relationship between organizational behavior and student outcomes remains unexamined when one considers that organizational behavior is a theoretical domain with great potential to improve our understanding of how the college environment affects students (p. 268)”. Chen (2011), reflecting on Baird’s (1988) observation many years later, and in concert with the inconclusiveness of research noted by Ro, Terenzini and Yin (2013), concluded that, despite progress, developing a full knowledge of the relationship between organizational behavior and student outcomes remained an important quest. Chen proposed that the quest could be accelerated by the application of analytical methods that (a) better accommodate the hierarchical and longitudinal nature of the institutional

variables that influence student experiences, (b) incorporate the manner with which institutions change over time, and (c) broaden the range of institutional characteristics that are evaluated.

Specific to this study, organizational behavior is one of the distinguishing aspects of individual colleges and universities that influences, in some manner, student outcomes. To provide context for this description of the conceptual framework for this study, below is a brief history of the study of organizational behavior and its application to higher education.

The conceptualization and study of organizational behavior emerged from the melding of the theory of organizations as systems with early management theory (McCann, 2004). The Industrial Age of the Nineteenth Century gave birth to the perspective of organizations as distinct entities comprised of unified, interconnecting systems of individuals and activities (Chandler, 1962; Morgan, 1997). One vein of inquiry intent on better understanding organizations focused on the constituent parts. Scientific Management, as one example, promoted by Frederick Taylor (1911), assessed discrete job functions on the basis of repetitive actions and objective measurements. As another example, a classic series of experiments conducted between 1924 and 1932 in the Hawthorne Works operated by Western Electric further illustrates attempts to derive understanding about the interaction between the work environment and employee productivity (Landsberger, 1958). The varying and differing interpretations of the results of those experiments, known as the “Hawthorne Effect,” underscore the complexity of the interactions within organizations (Olson, Verley, Santos, & Sala, 2004).

Social psychologists, building upon the results of the Hawthorne Studies, further illuminated facets of the human element underlying organizational behavior (keeping in mind that organizations do not behave—rather, organizational behavior arises from the behavior of individuals within organizations). As example, Lewin's (*Principles of Topological Psychology*, 1936) equation, $B = f(P, E)$, that proposed that behavior was a function of a person in the environment, was the foundation for expanding knowledge about how individuals interact with momentary situations. Maslow's (1943) theory of motivation offered further insights into human interaction with the environment by delineating a hierarchy of human needs that responded to various environmental stimuli and were not solely susceptible to manipulation within the isolated realm of organizations.

In the era following World War II, groundbreaking work by Simon (1947, 1957) and by March and Simon (1958) initiated the development of theories regarding decision-making within organizations. Their perspectives steered thinking in the direction of perceiving organizations as more than entities engaged in rational processes of production. They proposed that individuals within organizations acted on the basis of “bounded rationality,” or rationality based on incomplete knowledge of alternatives and consequences. With that in mind, they introduced the term, “satisficing” to describe the phenomenon of individuals pursuing the best-known alternative. The work of March and Simon gave rise to theories and studies based on bounded rationality that explained such mechanisms in organizations as symbolism and power dynamics.

The progress of industrial development and the evolution of knowledge about the functioning of organizations prompted more elaborate, systems-based conceptualizations

of organizations, including their internal operations and the interactions of organizations with the markets and economies they served. Chandler (1962) provided an historical perspective of industrial expansion on a grand scale. Chronicling the achievements of early corporate giants such as Standard Oil of New Jersey and General Motors, Chandler observed that the managerial structure of those organizations adapted to the strategic initiatives of the corporations. This phenomenon described by others as the Contingency Theory of organizations proposed that the most successful organizations are those that are the most effective in strategically aligning or realigning their structural components and processes as contingent responses to the circumstances or contexts in which those organizations operate (Mintzberg, 1979; Nadler, 1992).

Contingency theory has also been applied to leadership. Blake, Mouton and Bidwell (1962), considered the response of leaders to the interaction of two key variables impinging on organizations: (a) needs of the organization for production and profit, and (b) the needs of employees for mature and healthy relationships. They concluded that the greatest production was achieved and maintained over the long term when leaders employed “team management”—balancing the needs of the organization and employees—as the leadership style.

Implied by contingency theory was the challenge of even maintaining, if not improving, the quality of organizational processes and products amid dynamic change within and outside organizations. Management theories promoting continuous quality improvement arose as a response to that challenge. Continuous quality improvement expanded upon pioneering work typified by Taylor’s (1911) Scientific Management, which principally focused on the quality of end products, to consider how processes of

production and the human aspects of those processes could contribute to continuous improvement.

Other avenues of inquiry regarding organizations further centered on the manner with which organizations respond to change (Argyris & Schon, 1974; de Geus, 1997). That research resulted in a portrayal of organizations as an aggregation of multiple interacting systems. The systems perspective of organizations contributed to better understanding how organizations “learn” (McCann, 2004). This vein of inquiry illuminated the nature of interactions among individuals and groups within organizations and with the systems and technologies of organizations. Researchers posited that those interactions served as the basis for how “organizational knowledge” is developed, obtained and contributes to organizational effectiveness (Davenport & Prusak, 1998; McCann & Buckner, 2004).

With specific regard to the subset of organizations circumscribed within the industry of higher education, Baecker (2011) provided an insightful perspective of colleges and universities as organizations comprised of complex, inter-related systems. Although his observations were oriented toward viewing postsecondary institutions as social systems, Baecker’s views are germane to the challenge of determining how the systems inherent in colleges and universities contribute to their outcomes. Baecker identified what he described as the paradox of universities which is that the realm of higher education is replete with institutions that are organizationally complicated or unpredictable yet simultaneously readily recognizable as institutions of higher learning. Baecker opined poetically that a university is “rich in diversity, always elusive in its most

distinguished qualities, and nonetheless robust as few other things in social history”
(p. 2).

The enigmatic character of colleges and universities, particularly when attempting to divine the characteristics that contribute to organizational effectiveness and student outcomes, is a matter of longstanding. More than three decades prior to Baecker’s reflections on the university, Cameron (1978) posited that, despite 50 prior years of research on the topic of organizational effectiveness in colleges and universities, establishing a common definition of and means for assessing organizational effectiveness eluded researchers.

In response to those problems, Cameron (1978) chose to focus on the characteristics of colleges and universities, rather than goals or achievements, as means for clarifying the distinguishing features of effective institutions. His intent was to “identify a core group of effectiveness criteria that are relevant to organizational members, applicable across subunits, and comparable across institutions” (p. 611). He additionally adopted the perspective that there was not one unitary concept that would explain effectiveness in all organizations. Rather, based on the multifaceted character of colleges and universities, Cameron identified nine qualities, unique to higher education, that he proposed contributed, in varying combinations and degrees, to operational effectiveness and student outcomes:

1. Student educational satisfaction – the degree to which students found satisfaction with their educational experience.
2. Student academic development – the extent of knowledge acquisition or progress in academic learning.

3. Student career development – the degree of career development or opportunities for preparation for employment provided by the institution.
4. Student personal development – the extent of student development on the basis of either non-academic criteria or criteria pertaining to career development.
5. Faculty and administrator employment satisfaction – the measure of satisfaction derived by members of the faculty and administrators from employment at the institution.
6. Professional development and quality of the faculty – the level of professional attainment by faculty members and support for professional development provided by the institution.
7. Systems openness and community interaction – the degree of interaction with, including service in and adaptation to, the environment external to the institution.
8. Ability to acquire resources – the capacity of the institutions to obtain external resources, including qualified students, capable faculty and financial backing.
9. Organizational health – the sustainability and viability of the institution based on internal practices and processes of the institution.

Roughly contemporaneously with Cameron (1978), Baldrige, Curtis, Ecker and Riley (1977), went beyond identifying characteristics of effectiveness, and were at the forefront of describing the multidimensional nature of organizational behavior in colleges and universities. Assigning the overarching label of “organized anarchies” to postsecondary institutions, they specifically identified characteristics of postsecondary

institutions that distinguished those from other organizational types. Baldrige et al. outlined those distinguishing features to include a service orientation rather than focus on profit-making, goal ambiguity, ill-defined technologies, workforces predominated by professionals, and tenuous environmental vulnerability. On the basis of those characteristics, they delineated three models of organizational behavior: *bureaucratic*, *collegial*, and *political*.

Other scholars of higher education subsequently developed taxonomies of organizational behavior in colleges and universities (cf. Berger & Milem, 2000). For example, Cameron, cited above, in partnership (Cameron & Ettington, 1988), built upon the proposition of nine institutional characteristics that contributed to organizational effectiveness to define four dimensions based on the major source of influence: *hierarchy*, *market*, *clan*, and *adhocracy*.

Berger and Milem (2000), prompted by both the divergence and parallels among the various organizational-behavior classifications, endeavored to unify those into a single model of dimensions of organizational behavior for application in higher education. Although drawing upon features of extant models to create their dimensional classification of organizational behavior, Berger and Milem (2000) found extensive influence from multidimensional frameworks created by Bolman and Deal (1984, 2003) and by Birnbaum (1988).

Bolman's and Deal's (1984, 2003) framework consisted of the four following dimensions:

- *Structural* – fashioned after classical, bureaucratic, and rational theories of management, and implies organizational formality, rationality and hierarchical structure.
- *Human Resource* – places importance on alignment between organizations and individuals who populate those, as well as on achieving results that are of mutual benefit to the individuals and organizations.
- *Political* – typified by emphasis on conflict, power, and competition for acquisition of and control over resources
- *Symbolic* – relies on symbols to provide meaning to otherwise uncertain or ambiguous elements within the organization

Birnbaum (1988), influenced by scholarship across multiples disciplines over a period of a half century outlined five dimensions of organizational functioning in colleges and universities:

- *Bureaucratic* – similar to the *structural* dimension of Bolman and Deal
- *Collegial* – aligned with the *human resources* dimension of Bolman and Deal
- *Political* – equivalent to the *political* dimension proposed by Bolman and Deal
- *Anarchical* – drawn from the “organized anarchy” characterization of colleges and universities by Baldrige et al. (1977)
- *Cybernetic* – organizational functioning is based on the interaction of proscribed and regulated systems of operation

Berger and Milem (2000) fused the conceptualizations of organizational-behavior dimensions of Bolman and Deal (1984, 2003) and Birnbaum (1988), along with influence

from other frameworks, to propose the following five dimensions of organizational behavior in higher education:

- *Bureaucratic* – premised on formal structure; logically- and rationally-based goals on which all agree, and to which all are working; hierarchical organization structure populated with individuals appointed to positions based on competence
- *Collegial* – value is placed on individuals, perceived purpose of organizations is to serve people, mutual reliance exists between organizations and individuals, and individual within the organizations rely on each other.
- *Symbolic* – symbols compensate for and provide meaning to ambiguity and uncertainty, actions and processes acquire value more through what those communicate than what those produce, events and results hold different meaning for different organizational members
- *Political* – typified by posturing for power on the basis of diverse, sometimes competing goals, shifting alliances, sub-entities pursuing ends separate from those of the organization, and positioning for control of resources
- *Systematic* – defined by an open, flexible and adaptable system of interrelated components; and structural permeability that fosters free flow of ideas, resources and personnel

Berger and Milem (2000) observed that both benefits and problems were associated with each of the dimensions of organizational behavior. They posited, as well, that no individual colleges and university was characterized by a solitary dimension of organizational behavior. Rather, they reflected an earlier proposition of Berger (1997)

that each institution was distinguished by possessing a unique combination of varying degrees of the five dimensions of organizational behavior that differed from that of other institutions. They cited the study of eight small independent colleges conducted by Berger (1997) that supported that notion. In that study, Berger identified three different organizational types that related to combinations of dimensions of organizational behavior. One organizational type, for example, that Berger labeled as *competitive*, was defined by medium levels of the symbolic, systematic and bureaucratic dimensions; but high degree of the political dimension contrasted with a minor proportion of collegial behavior. Behavior in the *competitive* institutions was predominated by active competition for resources, and striving among institutional factions for preeminence over others, and subordination in inclinations toward collaboration, mutual respect and spirit of consensus. Berger (1997) identified the remaining two organizational types as *casual* and *cohesive* based on the combinations of dimensions of organizational behavior exhibited by institutions comprising those types.

Berger and Milem (2000) incorporated their schema of dimensions of organizational behavior into a Conceptual Model for Researching Organizational Impact on Student Outcomes. That model, illustrated below in Figure 2, recognized the interrelationship of multiple factors on determining student outcomes. Those included the characteristics possessed by individual students when they entered college, and the direct effect of those personal characteristics on the nature of their interactions with peer groups and with outcomes. The model also implied that the peer interactions contributed to the character of the overall student experience which, according to Berger and Milem, was comprised of both behavioral and perceptual components. In the model, student

experience, along with student characteristics at entrance and peer group characteristics, also directly affected student outcomes. As depicted in the model, the influence of the dimensions of organizational behavior combined in interactive manner with structural/demographic features of the organization to constitute organizational characteristics. As conceived by Berger and Milem, those organizational characteristics indirectly affected student outcomes by directly influencing peer group characteristics and student experience and student experience.

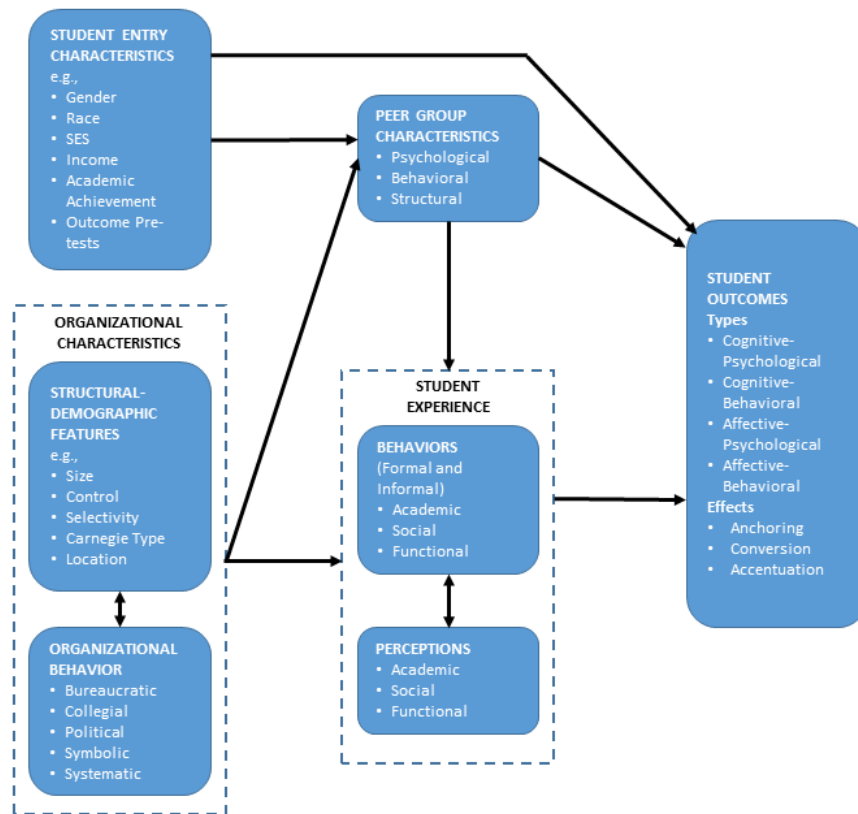


Figure 2. Conceptual Model for Researching Organizational Impact on Student Outcomes (Berger and Milem, 2000)

Terenzini and Reason (2005) adapted the conceptual model of Berger and Milem (2000) to develop a Comprehensive Model of Influences on Student Learning and

Persistence. Reason (2009) observed that, at that time, the model of Berger and Milem was exceptional as one of few models that explicitly emphasized the influence of organizational characteristics on student outcomes. As portrayed in Figure 3, in their adaptation of the model of Berger and Milem, Terenzini and Reason integrated features of models of student persistence crafted by Astin (1985, 1993), Tinto (1975, 1993) and Pascarella (1985). The completed model of Terenzini and Reason combined four distinct components: the precollege experiences and characteristics of students, the organizational environment, the context provided by peer interactions, and individual student experiences. Excluding the experiences and characteristics of students prior to college, those latter components constituted the overarching college experience.

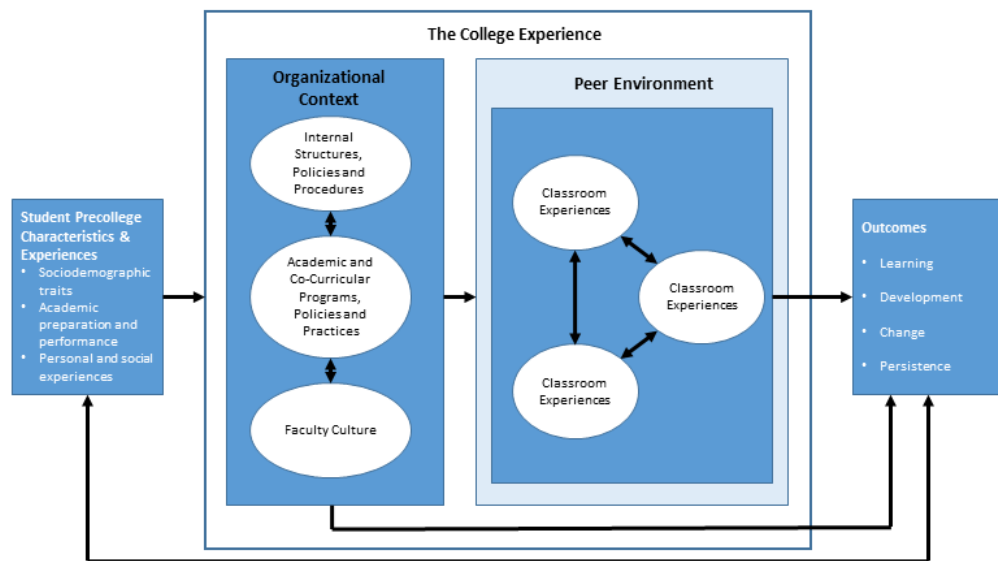


Figure 3. Comprehensive Model of Influences on Student Learning and Persistence (Terenzini and Reason, 2005)

The notable variation of the model conceptualized by Terenzini and Reason (2005) from the model of Berger and Milem (2000) was the characterization of the

organizational component. Instead of delineating distinct dimensions of organizational behavior that complemented structural/demographic facets of the organization as in the Berger and Milem model, Terenzini and Reason proposed three domains of the organizational context: internal structures, policies and practices; academic and co-curricular programs, policies and practices; and faculty culture. They offered a two-fold rationale for the stark modification to the organizational component of the Berger and Milem model. First, Terenzini and Reason proposed that the concreteness of their organizational domains rendered those easier to observe and to study than the abstraction of dimensions of organizational behavior found in the Berger and Milem model. They argued further that the three organizational domains in their model were more proximal to the experiences of students, offering more discernable guidance for the development and implementation of institutional practices that would enhance the student experience.

Ro, Terenzini and Yin (2013) utilized the model proposed by Terenzini and Reason (2005) to re-examine between-college effects on student outcomes. (Ro et al. noted that Pascarella and Terenzini (1991) coined the term, “between-college” effects, to describe those institution-specific effects, or influences, that served as the basis for differences observed *between colleges* in terms of student outcomes.) Ro, et al. conducted their research in response to the substantive body of research that concluded that weak correlation existed between structural institutional characteristics (e.g., size, selectivity, type of control) and student outcomes. They speculated that some combination of three explanations accounted for those null results. First, they reasoned that the dominant influence of structural institutional characteristics might mask the influence of other, more subtle institutional features, and the structural characteristics

were functionally remote from the experiences of students. Second, Ro et al. suggested that structural institutional characteristics may not constitute the best predictors of student outcomes. Rather, other finely defined aspects of institutions not typically considered in between-colleges studies may more-powerfully influence student outcomes. Finally, the researchers theorized that earlier studies may have been confounded by a false assumption that the linkage between institutional characteristics and student outcomes was *direct* instead of *indirect*. They offered that, instead of a direct linkage, institutional characteristics might be “links” in an extended “causal chain” that terminated with student outcomes.

Ro, Terenzini and Yin (2013) offered two propositions as the basis for their re-evaluation of between-college effects. The first stated that the structural characteristics of colleges and universities wielded an *indirect* influence on student outcomes (as opposed to the *direct* influence examined in earlier research). They submitted as the second proposition that the internal, organizational features of institutions (e.g., policies, programs and culture) exercised greater influence on the experiences of students than do structural aspects of institutions.

A sample of 5,249 students in 31 colleges of engineering served as the pool of participants for the study by Ro et al. They examined the relationship of two sets of institutional characteristics—*structural-demographic* and *organizational context features*—with five measures of student experience empirically correlated with student outcomes. Data analysis relied on multi-level, structural equation modeling to determine the proportional reduction in variance arising from adding variables to the statistical model.

Ro et al. concluded that the data analysis strongly supported both propositions: that an indirect relationship existed between institutional characteristics and student outcomes, and that the relationship between organizational context characteristics and student outcomes was notably stronger than the relationship between institutional structural-demographic factors. Summarizing the findings of their study, Ro et al. opined that “current theories or models of college effects on students may well be *underspecified, overlooking* [italics added] both the nature and length of the “causal chain” relating to student learning and development. Current theory and research tend to leave unexamined in any detail what may be important internal, organizational context factors that are conceptually, temporally, and logically prior to student’s [college] experiences” (p. 277).

The conceptual framework for this study is founded on the models of Berger and Milem (2000) and Terenzini and Reason (2005), and research by Ro, Terenzini and Yin (2013). It assumes that institutional characteristics influence student outcomes. The particular institutional characteristic under examination in this study is organizational behavior and its influence on the allocation of financial resources. Drawing upon the analogy of Ro et al., that student outcomes represent the final elements in a “causal chain” of factors and events, the conceptual framework for this study considers organizational behavior and its concomitant relationship with resource allocation to be “links” in that chain that ultimately affects student outcomes. Further invoking the perspectives of Ro et al., the conceptual framework for this study envisions organizational behavior and the allocation of resources as institutional characteristics that

(a) have been *underspecified* and/or *overlooked* in previous research, and (b) cast indirect influence on student outcomes.

The conceptual framework for this study may be visually rendered by assuming that the Organizational Characteristics component of the Berger and Milem (2000) model is equivalent to the Organizational Context facet of the Terenzini and Reason (2005) model. (That equivalence derives from the acknowledgement of Terenzini and Reason that their Comprehensive Model of Influences on Student Learning and Persistence was adapted from, and shares similarities with, the Conceptual Model for Researching Organizational Impact on Student Outcomes of Berger and Milem.) Both incorporate organizational behavior but portray it differently. Berger and Milem explicitly identify “organizational behavior” as a discrete element of the Organizational Characteristics component of their model. Terenzini and Reason (2005) chose to replace what they deemed to be the abstraction of dimensions of organizational behavior in the Berger and Milem model with three primary domains within the Organizational Context of their model, but they observed, nonetheless, that organizational behavior and institutional culture shape student outcomes (See also Reason, 2009). The consequent inference, then, is that the three domains of the Organizational Context of the Terenzini and Reason model operate in and are defined by a milieu of organizational behavior. Accepting the equivalence of the two constructs—Organizational Context and Organizational Characteristics—the two can be reconciled by envisioning those as offering different views of the same 2- by 3-element matrix. That matrix is portrayed below in Figure 4.

		ORGANIZATIONAL CHARACTERISTICS (Berger & Milem, 2000)	
		Structural-Demographic Features	Organizational Behavior
ORGANIZATIONAL CONTEXT (Terenzini & Reason, 2005)	Internal Structures, Policies, and Practices		FRAMEWOK FOR STUDY
	Academic and Co-Curricular Programs, Policies, and Practices		
	Faculty Culture		

Figure 4. Reconciliation of the Organizational Context Component of the Terenzini and Reason (2005) model with the Organizational Characteristics facet of the Berger and Milem (2000) model

Both models portray an interactive relationship among elements within the respective organizational components of the models (i.e., Organizational Context and Organizational Characteristics). Assuming that those two organizational components are equivalent, but differently described, depictions of the same collective phenomena, by extension, interaction among the five elements from the two organizational components of the separate models illustrated in Figure 4 may reasonably be concluded. For example, in varying degrees *structural demographic features* of an institution may be reflected in the *internal structures, policies and practices, academic and co-curricular programs, policies and practices, and faculty culture* within that institution.

For purposes of illustrating the conceptual framework for this study, the allocation of financial resources is considered to be subsumed within the *internal structures, policies and practices* domain of the Organizational Context of the Terenzini and Reason

(2005) model. *Organizational behavior* is a component of the Berger and Milem (2000) model. The focus of this study is the intersection of those two components, represented as the dark cell in the upper-right corner of Figure 4.

This study explored *whether* a discernable difference exists among the three institutions of this study in terms of dimensions of organizational behavior associated with the allocation of financial resources that might account for variations among the institution in terms of retention and graduation rates. The study was guided by the following research questions:

1. To what extent do members of the senior leadership within an institution share common perspective on the dimensions of organizational behavior related to the decision-making processes used to allocate financial resources?
2. How do dimensions of organizational behavior influence the manner with which members of the senior leadership make decisions regarding the allocation of financial resources?
3. To what extent are variations in rates of persistence and graduation rates among institutions that are otherwise similar in terms of data reported to IPEDS and other commonly observed characteristics associated with discernable differences among the institutions in terms of dimensions of organizational behavior related to financial decision making?

Keeping in mind the indirect nature of the influence of organizational characteristics on student outcomes implied by both the Berger and Milem (2000) and Terenzini and Reason (2005) models, determining the general nature of any implied

“causal chain” or the positioning of organizational behavior and resource allocation along that chain would be beyond the scope of this work. The results of this study, however, will serve as the basis for further research on *underspecified* and/or *overlooked* factors that indirectly affect student outcomes.

Research Design

The association between variations in student outcomes and the interplay of organizational factors and financial resource allocation was examined through the study of three separate postsecondary institutions. The institutions selected for this research consisted of three colleges that were similar in terms of key institutional characteristics but differed markedly in terms of student persistence and graduation rates. The studies were conducted on the basis of data obtained from multiple sources: (a) one-on-one interviews with senior leadership at each institution, (b) a structured Q-Sort exercise, and (c) pertinent institutional documentation related to student persistence, financial operations, and the organization, as provided by the colleges. The results of the individual institutional studies were compared to assess the extent to which disparate rates of student persistence and graduation among otherwise comparable institutions was attributable to the influence of organizational idiosyncrasies on the allocation of financial resources.

Institutions

In order to most effectively explore the potential for differences in persistence and graduation rates being associated in some way with distinctions in the dimensions of

organizational behavior characterizing the allocation of financial resources, the selection of institutions selected for this study focused on minimizing any other distinctions. The colleges included in this study were all predominantly-residential, baccalaureate, independent post-secondary institutions. Identification of the colleges occurred through a multistage screening process based on institutional data available through the Integrated Postsecondary Education Data System (IPEDS) maintained by the National Center for Education Statistics of the U. S. Department of Education. The following criteria served as the basis for distinguishing an initial pool of institutions from which to draw that were generally similar in terms of geographical location, size, institutional control, and classification:

- Located in the six New England states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont
- IPEDS Institutional Size Categories of “Under 1,000” and “1,000 – 4,900”
- IPEDS Sector of Institution of “Private not for profit, 4-year or above”
- IPEDS Level of Institution “Four or more years”

An initial pool of 101 institutions emerged from the use of these four basic criteria.

To enhance the comparability of the institutions considered for inclusion in this study, the enrollment criteria were refined to limit the pool to institutions with primarily undergraduate student bodies, and full-time undergraduate enrollment of between 500 and 1,500 students. That refinement diminished the number of potential institutions to 29. Those enrollment parameters were founded on a twofold rationale. The first was to promote, to the extent possible, the homogeneity of the three institutions ultimately studied in this research. The upper limit on undergraduate enrollment was premised on

the probability that institutions with larger enrollments may incorporate distinguishing characteristics—other than the manner with which financial decision making occurred—that could account for differences in retention and graduation rates. The second aspect of the rationale related to the lower limit of the enrollment range, and concerned institutional vitality. Institutions with enrollments of less than 500 full-time undergraduate students were excluded from the study to avoid the potential confound of financial decision-making being differentially affected by extraneous factors that primarily impinge on extremely small institutions.

To further the search for three potential institutions that differed in terms of retention and graduation rates, but were similar in terms of other key characteristics, this small sample of colleges was disaggregated into three groups of roughly equivalent numbers on the basis of six-year graduation rates. The three groups of institutions were characterized by median six-year graduation rates of 39%, 48% and 58%, respectively. The final selection of institutions for inclusion in this research was based on the practical acknowledgement that the ultimate group of participating colleges would be determined by the willingness of the respective presidents and senior leadership of those colleges to take part in the study. Consequently, invitations to participate in this research were extended to the presidents of multiple institutions within each of the three graduation-rate groups that were most similar to institutions in the other groups. Similarity was assessed on the basis of student-related and institutional measures. To ensure that similarities were characteristic of the institutions, rather than incorrectly inferred from isolated statistical aberrations, that assessment was based on the average of selected annual IPEDS data over the five-year period ending with the 2015/16 academic year. Unless

otherwise noted, statistics cited hereafter related to institutional characteristics will be the five-year mean for those data.

One president from each graduation-rate group graciously accepted the invitation to participate in this study. To maintain the anonymity of the institutions those will not be identified by name in this research. For purposes of reference, however, those will be known within this study as Oakleaf College, Metropolis College and Promontory College.

According to the research design for this study, the three colleges differed in terms of retention and graduation rates, but exhibited similarities in terms of other institutional characteristics. Six-year graduation rates ranged between a low of 37.2% at Promontory College and a high of 65.4% at Oakleaf College, with a rate of 57.2% at Metropolis College. The three institutions were correspondingly positioned in terms of first- to second-year retention rates (Oakleaf = 81.8%, Metropolis = 74.7%, and Promontory = 58.3%).

On the basis of other characteristics, overall, Oakleaf, Metropolis and Promontory Colleges shared similarities in terms of generally acceptable ranges for measurements related to those characteristics. At all three institutions, for example, full-time, degree-seeking undergraduates constituted the predominate proportion of all enrolled students; undergraduate enrollment was roughly equivalent, ranging between 836 and 1,271 students; and all three colleges are situated in urban areas within no more than 100 miles of each other. Low student-to-faculty ratios existed at all three institutions, with the highest at 14.8 at Promontory College and the lowest at 13.0 at Oakleaf College. The price of attendance varied among the three colleges by no more than \$500 (\$44,127 at

Metropolis College and \$44,616 at Oakleaf College), although a gap of little more than \$3,000 existed among the colleges in the cost of attendance after institutional grant aid (\$27,947 as the low at Oakleaf College ranging to \$30,964 at Promontory College).

In terms of student characteristics, the scores for the 25th and 75th percentiles for the ACT and dimensions of the SAT examinations were comparable at all three institutions. In addition, nearly all full-time undergraduate students at each college received institutional grant aid, with the percentage ranging from 97.8% at Promontory College to 99.4% at Metropolis College. Variation existed, however, in the amount of grant aid, with a low of \$13,594, on average, at Promontory College and mean of \$16,699 at Oakleaf College as the high. The percentages of full-time undergraduate students receiving Pell Grant aid, along with the amounts of Pell-Grant awards, implied commonality among the colleges in terms of student socioeconomic status.

Differences existed among the colleges on some institutional dimensions. In terms of selectivity in admissions, Oakleaf College, with an acceptance rate of 78.8%, represented an outlier relative to the lower acceptance rates of Promontory College (65.7%) and Metropolis College (63.8%). Although notable, with Oakleaf College as the institution with the highest graduation and retention rates, that difference is counter to the presumption that retention and graduate rates tend to be lower at institutions that are less selective in admissions. Continuing further down the “admissions funnel,” however, the percentage of admitted students who enrolled was markedly lower at Promontory College at 10.3% than either of the other two colleges (26.4% at Metropolis College and 33.0% at Oakleaf College). As another difference, Promontory College ranked highest among the three colleges in terms of both core revenue per full-time equivalent student and core

expenditures per full-time equivalent student, by margins of almost \$2,000 and \$1,000, respectively. Those differences are also counter to prevailing conceptualizations of the relationship between institutional resources and retention and graduation rates. Finally, at \$16,055, endowment assets per full-time equivalent student at Metropolis College exceeded the next closest ratio of endowment assets per full-time equivalent student at Oakleaf College by more than \$10,000, and the ratio at Promontory College by nearly \$12,000. See Table 1, below, for a complete comparison of institutional characteristics utilized in the selection of institutions for this study.

Table 1. Comparison of Institutional Characteristics

Institutional Characteristic	Promontory College	Metropolis College	Oakleaf College
Full-time Retention Rate	58.30%	74.70%	81.80%
Four-year Graduation Rate	27.40%	49.20%	52.60%
Five-year Graduation Rate	35.80%	54.40%	57.20%
Six-year Graduation Rate	37.20%	57.20%	65.40%
Percentage of Applicants Admitted	65.70%	63.80%	78.80%
Percentage of Admitted Who Enrolled	10.30%	26.40%	33.00%
SAT Critical Reading 25 th Percentile Score	385	420	413
SAT Critical Reading 75 th Percentile Score	480	536	500
SAT Mathematics 25 th Percentile Score	385	415	415
SAT Mathematics 75 th Percentile Score	475	524	498
SAT Writing 25 th Percentile Score	385	416	417

Institutional Characteristic	Promontory College	Metropolis College	Oakleaf College
SAT Writing 75 th Percentile Score	480	538	524
Full-time Undergraduate Enrollment	836	1,271	934
Full-time Degree-seeking Undergraduates as Percentage of All Undergraduates	88.30%	79.20%	74.70%
Student-to-Faculty Ratio	14.8	13.2	13.0
Percentage of Full-time First-time Undergraduates with Institutional Grant Aid	97.80%	99.40%	99.00%
Average Amount of Institutional Grant Aid	\$13,594	\$15,672	\$16,669
Percentage of Full-time First-time Undergraduates with Pell Grant Aid	59.00%	52.80%	53.10%
Average Amount of Pell Grant Aid	\$4,556	\$4,361	\$4,183
Average Price of Attendance	\$44,558	\$44,127	\$44,616
Average Cost of Attendance after Institutional Grant Aid	\$30,964	\$28,455	\$27,947
Core Revenue per Full-time Equivalent Student	\$18,020	\$16,084	\$15,966
Core Expenditures per Full-time Equivalent Student	\$16,649	\$14,744	\$15,772
Endowment Assets per Full-time Equivalent Student	\$2,101	\$16,055	\$5,847

Source: The Integrated Postsecondary Education Data System maintained by the National Center for Education Statistics of the U.S. Department of Education. Figures shown reflect the means of annual data for the five-year period ending with the 2015/16 academic year.

While no three institutions are likely be found that are similar in every respect, the three colleges serving as the basis for this research shared the common features of small, not-for-profit, four-year baccalaureate institutions that are primarily or highly residential, and located in comparable settings within New England. In the course of this research,

awareness was given to apparent differences among the institutions and to considering the influences of those difference on the findings from this research.

Participants

Those who comprised the “dominant coalition” of institutional leaders at each college served as the participants in this study. As described by Thompson (1967), the

Table 2. Study Participants by College, Position and Gender

Institution and Position	Gender
Oakleaf College	
President	F
Chief Academic Officer	M
Chief Financial and Administrative Officer	M
Chief Enrollment Management Officer	M
Chief Student Affairs Officer	F
Chief Advancement Officer	F
Dean of Graduate Studies	F
Dean of Student Success Strategies	F
Metropolis College	
President	F
Chief Academic Officer	M
Chief Financial and Administrative Officer	F
Chief Strategic Planning Officer	F
Dean of Graduate Studies	F
Promontory College	
President	M
Chief Academic Officer	M
Chief Financial and Administrative Officer	F
Chief Advancement Officer	M
Chief of Staff	M

dominant coalition is that group of individuals who determine organizational effectiveness by exercising control over decision-making, the allocation of resources, the establishment of policy, and the setting and pursuit of institutional goals (See also Cameron, 1978). The participants in this study included the president, chief academic officer and chief financial officer of each institution as well as others of the college leadership identified by the college presidents who shared prominent responsibility for financial decision making, and who were willing to participate. By virtue of the skills and knowledge required to qualify for positions held by the participants, they universally possessed extended years of experience in higher education, providing substantive direction to institutional matters. The ultimate number of participants was 18 divided by institution and by gender as shown in Table 2.

Data

Data for responding to the research questions were obtained from multiple sources. The primary data source was a structured Q-Sort exercise, described more fully below, based on Q Methodology. Supplementary to that source were perspectives obtained through brief one-on-one interviews with each of the study participants, and documentation about the institutions provided by representatives of the respective colleges and that is publicly available.

Q Sort and Q Methodology

Q Methodology offers a means for developing an empirical representation of subjective, personal viewpoints (McKeown & Thomas, 2013). Relying on those empirical representations, Q-Methodology includes a type of factor analysis for evaluating personal, subjective perspectives, and correlating those with the perspectives

of other individuals. Through that factor analysis, Q-Methodology provides an objective basis for quantifying the subjective observations of individuals into meaningful themes.

In the 1930s, Q Methodology originated with William Stephenson, a psychologist and physicist at the University of Oxford (Watts & Stenner, 2012). Stephenson was a student of Charles Spearman, renowned for conceiving the foundations of factor analysis (Brown, 1980). Factor analysis evolved from statistical methods that assessed the degree of correlation between or among variables. As described by Watts and Stenner (2012), the essence of factor analysis was the distillation of multiple, individual variable-on-variable relationships into a smaller number of grouped correlations based on shared, common characteristics. These groupings, referred to as “factors,” provided effective means for depicting observed phenomena. Watts and Stenner offered, as example, the utility and parsimony of characterizing the correlation of verbal, mathematical and problem-solving skills as the singular factor “intelligence.”

Stephenson generically referred to the body of analytical techniques based on correlations among variables as “R methodology” because those techniques relied or were variations on the r statistic, or Pearson’s r , devised by Karl Pearson (Webler, Danielson, & Tuler, 2009). By the mid-1930s, R methodology became a valuable tool within the discipline of psychology for the study of differences among individuals (Watts & Stenner, 2012). Stephenson (1936) considered the suggestion that the results of R-methodology illuminated “individual differences” to be misleading since those did not provide true understanding of differences among individuals in terms of unique personal perspectives or characteristics, but in terms of discrete variables. To achieve the end of evaluating commonalities among individual in terms of personal, subjective

dimensions—instead of relationships among variables impinging on those individuals—
Stephenson proposed an inversion of the typical factor analysis:

Factor analysis . . . is concerned with a selected population of n individuals each of whom has been measured in m tests. The $(m)(m-1)/2$ intercorrelations for these m variables are subjected to . . . factor analysis. The technique, however, can also be inverted. We begin with a population of n different tests (or essays, pictures, traits or other measurable material), each of which is . . . scaled by m individuals. The $(m)(m-1)/2$ intercorrelations are then factorized in the usual way (pp. 344-345).

Stephenson termed this inverted form of factor analysis “Q methodology” to distinguish it from R methodology. Brown (1980), a prominent scholar and proponent of Q methodology, suggested that the sole provenance of Q methodology is the study of subjectivity:

Only subjective opinions are at issue in *Q*, and although they are typically unprovable, they can nevertheless be shown to have structure and form, and it is the task of *Q technique* to make this form manifest for purposes of observation and study (p. 58).

Watts and Stenner (2012) concurred with Brown’s notion proposing that, through an abductive process, Q methodology uncovered meaningful correlations within subjective personal perceptions, and then indicated conceivable theoretical bases for those correlations. As such, they clarified that Q methodology serves as a valuable exploratory tool for generating theories of understanding rather than for confirming hypotheses.

Fundamentally, the capacity of Q methodology to facilitate factor analyses of qualitative data is achieved by requiring participants to rank-order subjective material in a forced-choice manner. That is accomplished by engaging individuals in the organization of sets of items across a spectrum in a hierarchical manner. The spectrum is similar to a

normal frequency distribution with a few items situated at the ends and the number of items growing at points along the spectrum as those points approach the middle of the spectrum. The number of positions in which to place items within the distribution is the same as the number of items to be sorted, forcing participants to affix a discrete ranking to every item. Numerical values are assigned to the items based on where those are placed within the distribution. Factor analysis is accomplished on the basis of the numerical values assigned to each item. The collection of items to be evaluated and sorted by the participants is commonly referred to as a *concourse*, and the ultimate assignment of those items within the defined dimensions of the distribution is known as the *Q Sort*.

The concourse of items employed in this study to solicit individual perspectives related to organizational behavior associated with the allocation of financial resources consisted of 41 words or brief phrases. The specific words and phrases are listed in the Appendix. The compilation of words and phrases was influenced by existing literature describing or instruments used to assess organizational behavior, organizational effectiveness and decision-making within institutions. As example, those included but were not limited to the *Survey of Organizational Dimensions* (Berger, 1997), dimensions of organizational effectiveness defined by Cameron (1978), the *Organizational Culture Assessment Instrument* (Cameron & Quinn, 1999), the *Organizational Action Survey* (Johnson & Schwandt, 1998) the framework of Shepherd and Rudd (2014) describing contextual influence on strategic decision making, and Tierney's (1988) model of organizational culture. The concourse of words and phrases was compiled with the intent of including roughly equal numbers of words or phrases that might typically be construed as positive, negative, and neutral in meaning. Due to the subjective interpretation of

participants that is inherent to Q Methodology, underlying the creation of the concourse was the expectation that individual participants might assign alternative connotations to selected words or phrases.

The sorting distribution for this study is depicted in Figure 5. It consisted of nine columns that varied symmetrically in height—or in terms of the number of words or phrases that could be assigned to each column—from three at the ends to seven in the middle. Values were assigned to the columns, ranging from -4 to +4. Participants were instructed to use those values as they sorted the words and phrases to indicate the extent to which they agreed or disagreed that the items they assigned to the respective columns described financial decision making at their institution. The numbers in parentheses at the base of each column indicated the number of words or phrases allowed in each column. The total number of spaces in the sorting distribution was 41, the same as the number of words or phrases to be sorted by the participants.

Strongly Disagree		Neutral					Strongly Agree	
-4	-3	-2	-1	0	+1	+2	+3	+4
(3)								(3)
	(4)						(4)	
		(5)	(5)		(5)	(5)		
				(7)				

Figure 5. Sort Distribution

The placement of words and phrases within the sorting distribution constituted the Q Sort for each participant. For purposes of data analysis, numerical values were assigned to each word or phrase based on the columns in the sorting distribution in which participants placed individual those items. Photographic images were used to record each completed Q Sorts.

Interviews

Brief personal interviews of approximately 30 to 45 minutes were conducted with each participant. The purpose of the interviews was to acquire context for participants' responses to the Q Sort exercise. Guiding questions such as the following were used to solicit participant perspectives on the current state of financial decision-making at their institutions:

- What is the process for allocating financial resources at your institution?
- What are the predominant factors that are considered in the allocation of financial resources?
- Please elaborate on how those decision-making processes specifically relate to the student experience, student success, student retention and graduation rates.
- What is your role in making decisions pertaining to the allocation of financial resources?
- Who else is involved in those decisions, and what are their roles?
- Who has primary influence over decisions about the allocation of resources?
Please elaborate on the basis for and the results of that primary influence.

As prompted by responses of the participants, some questions were omitted, or other questions were posed to obtain further understanding of the participants' views of or involvement in the allocation of financial resources.

Documents

A third source of contextual data was documentation related to the institutions. Two classes of documentation were collected. Items provided at the discretion of the institutional leaders constituted the first class of documentation. Due to the discretionary nature of those offerings, the types of documentation in that category varied across the three colleges. Examples included descriptions of policies and practices for annual budget development, strategic plans, internal records of retention and graduation rates, and audited financial statements. Publicly available documentation, such as Form 990 filings with the Internal Revenue Service, or data submitted to IPEDS constituted the second class of documentation.

Procedure

Data collection from each participant occurred on an individual basis and consisted, as described above, as a short interview followed by structured Q Sort exercise. Meetings with each participant were scheduled at a mutually-agreeable time between the participant and the researcher, and at a time when between one and a half and two hours of continuous time could be set aside for participation in the study. Meetings were conducted on the respective campuses of the participants in spaces free of

interruption—typically scheduled conference rooms or personal offices of the participants—and with table space sufficiently large for the Q Sort exercise.

At the beginning of each meeting, participants were informed that the purpose of the study was to collect information about their perceptions of financial decision-making at their institutions. They were told that the information would be collected by two methods: (a) an unstructured interview, and (b) a structured exercise that would be described to them in greater detail, later. Gratitude was expressed for the willingness of the participants to devote their time and attention to this research. They were also reminded of the agreement established when the meeting was scheduled, that they were welcome to decline involvement in the study and that they could withdraw from participation at any time. The introductory stage of the meeting concluded by reviewing an informed consent form with the participants. The interview portion of the meeting commenced upon execution of the informed consent document.

Conduct of Interview

The personal interviews consisted of general questions intended to solicit from participants their distinct perspectives of the decision-making processes at their respective institutions related to the allocation of financial resources.

Based on the responses of the participants, other questions were posed to obtain further understanding of the participant's perspective on and involvement in the allocation of financial resources.

Q-Sort Exercise

The subjective perspectives derived from the Q-Sort were obtained by requesting participants to rank order 41 words or phrases based on the participants' levels of agreement that those words or phrases describe decision making at their institutions. The rank-ordering was accomplished according to guided instructions. The steps below outline the manner by which the Q-Sort exercise were conducted:

1. Introduction to Q-Methodology and Q-Sort. Participants were introduced to the Q-Sort exercise with this narrative:

A particular methodology, referred to as Q-Methodology, will be used to obtain your perspective on decision-making here at your institutions. This methodology relies on asking you to respond to certain words or phrases by rank-ordering those according to the extent to which those words or phrases most closely describe decision making here at this institution. This exercise is intended to be brief, but please feel welcome to take the time that is necessary to thoughtfully rank-order the words and phrases. Please be mindful in your rank-ordering that your point of reference should be the current state of decision-making at this institution, and not on the basis of how it may have once been conducted or you would prefer that it should be.

2. Preliminary Sort. The participants were then be presented with the 41 cards on which the single words or brief phrases were printed. Having been introduced to Q Methodology, the participants received the following instructions to conduct an initial sort of those cards:

These cards contain the words or phrases that you will be asked to sort. There are 41 distinct cards. Each card contains one word or phrase. The sorting of the cards will occur in two stages. The first will be to sort the cards into three different categories, as I will explain. I will describe the second stage of the sorting process following the completion of the first stage.

For this first step in the sorting process, please assign each card to one of the three groups based on how well the word or phrase on the cards describes decision-making here at your institution. As mentioned earlier,

please sort the cards according to how the descriptive terms align with the current status of decision-making here, and not on the basis of how it was or how you anticipate it will be or should be.

In one pile, to your right, please place those cards that have words or phrases that you agree describe decision-making as it exists, now, here. On your left, in a second pile, please place those cards with the words and phrases that you do not agree reflect the state of decision-making here at your institution. Please create a third category of cards between the right and left piles of cards. In that middle pile, please place cards with words or phrases with which you neither agree nor disagree properly describe decision making at this institution, or about which you are ambivalent or confused.

Your sorting of the cards should represent your own personal view of decision-making here at this institution. Since the manner with which you separate the cards solely expresses your opinion about decision-making, here, please keep in mind that there are no right or wrong placements for the cards. In addition, there is no preconception about the number of cards that should be assigned to each of the three categories. Distribute those only on the basis of whether you agree or disagree that the words or phrases describe decision-making here, while placing those words or phrases with which you neither agree nor disagree in the middle pile.

Please, go ahead and sort the cards, now.

3. The Q-Sort. In the actual Q-Sort the participants were required to refine their disaggregation of the cards. To facilitate the refined rank-ordering of the cards, a guide strip was presented to the participants that identified nine different positions for the placement of the cards. The nine positions on the guide strip represented the headings for columns into which the cards should be placed, and the width of the columns corresponded to the width of the cards. The columns were labeled with individual numbers ranging from -4 on the far left to +4 on the far right, and zero in the middle. As indicated on the guide strip, the numbers reflected the extent to which the participants agreed that the words or phrases described decision-making at their campuses,

with -4 meaning “Strongly Disagree,” and +4 suggesting “Strongly Agree.” Corresponding with each of the nine numbers, the guide strip specified the number of cards that should be placed in each column. Placing cards in the nine respective columns as specified by the number of cards in each column resulted with a forced distribution of cards, as shown in Table 3.

The participants were directed to assign cards to the nine different columns with the following instructions:

Thank you for sorting the cards into the three separate piles. We will now proceed to the refinement of the sorting of the words and phrases that I mentioned earlier.

Table 3. Distribution for Card

"Strongly Agree"	+4	3
	+3	4
	+2	5
	+1	5
	0	7
	-1	5
	-2	5
	-3	4
"Strongly Disagree"	-4	3
Total Number of Cards		41

I have placed on the table in front of you what I will describe as a ‘guide strip.’ As that description implies, you will use this guide strip to direct you in establishing a refined rank-ordering of these cards. Please notice that the guide strip is divided into nine parts. Those nine parts are labeled with numbers ranging from -4 on the left to +4 on the right. As indicated on the guide strip, those numbers will serve as gauges of the degree to which, in your opinion, you agree the words or statements describe decision-making at your institution, with -4 corresponding to “Strongly Disagree,” +4 signifying “Strongly Agree,” and the other numbers representing gradations of agreement or disagreement in between.

As you assign cards to each of the nine values on the guide strip, please note that the guide strip specifies the number of cards that should be assigned to each value. For example, three cards each—no more and no less—should be assigned to values of -4 and +4. Moving inward on the scale, four cards each must be assigned to values of -3 and +3, five cards each to values -2, -1, +1 and +2, and seven cards to the value zero. By assigning cards to the values in this manner, all 41 cards will be assigned to a value, with none remaining. The order of the cards that are assigned to the same value is not important.

Do you have any questions?

We will begin by assigning cards to the extreme values at each end of the scale. You still have in front of you the three groups of cards from the preliminary sorting process. From the cards on your right, in the pile with words and phrases that you agreed described the decision-making process at this institution, please select the three cards that you strongly agree describe decision-making here. Place those under the +4 value on the guide strip.

Next, from the cards on your left with words and phrases that you disagreed were representative of decision-making on this campus, select three with words or phrases that you strongly disagree describe decision-making at this institution. Place those under the -4 value on the guide strip.

In a similar manner, work toward the center of the guide strip assigning words and phrases on the cards to values that represent your assessment of the extent to which you agree, or disagree, those items aptly apply to decision-making at this institution. As you progress through this rank-ordering process, please feel free to reassign cards from one value to another. In the end, however, you must have assigned all 41 cards to values, and the number of cards associated with each value must correspond to the number of cards for that value on the guide strip. If certain words or phrases seem unclear to you or could be interpreted in multiple ways, please rely on your own understanding or interpretation of those items to assign those to values that in your opinion are the most appropriate.

Please begin, now.

The participants were observed in the process of rank-ordering the words and phrases. Special note was made of words or phrases that the participants

exhibited difficulty assigning to values, or that they frequently switched from one value to another, or other aspects of the ranking process that might warrant follow-up questioning of the participant.

4. Recording of the Q-Sort Distribution, and Post-Sorting Interview. At the conclusion of the sorting exercise a photographic record of the Q-Sort was taken. These images of the distributions served as the basis for subsequent factor analysis.

As an aid in understanding and developing inferences from the rank-ordering by the participants, they were asked to elaborate on choices that they made in assigning the words and phrases along the disagree/agree continuum. Special attention in the post-sorting interview was directed to the rationales for assigning specific words or phrases to the extremes of the scale, and the underlying basis for difficulty in assigning certain words or phrases to any positions on the scale.

Conclusion of Procedure

The end of the post-sorting interview marked the conclusion of the one-on-one interaction with individual participants. The participants were thanked for taking part in the study. They were also provided the opportunity to offer any final observations about decision-making at their institutions, and to ask questions about the study. Care was taken in responding to participants' questions in a manner that, if the responses were shared with others, could inappropriately bias the responses of subsequent participants.

CHAPTER 4

DATA ANALYSIS AND RESULTS

This study explored the extent to which differences in dimensions of organizational behavior associated with the allocation of financial resources might account for, or at least correspond with, differences in graduation and retention rates among institutions that were otherwise similar in terms of key characteristics. That exploration was conducted using Q Methodology, a mode of research that allows the capturing of the expression of individual perspectives or interpretation of personal experiences in a manner that fosters discovery and understanding of subject matter. It represents an integration of qualitative and quantitative research methods (Baker, 2006). Q Methodology consists of two defining characteristics: the utilization of Q Sorts, as described in the previous chapter, for data collection, and the by-person examination of data through factor analysis to obtain a holistic understanding of the shared perceptions or experiences of individuals.

This chapter reports findings that emerged from the analysis of data collected by means of a Q Sort exercise, and provides interpretation of the meaning of those data. The results are initially conveyed in broad introductory form, and subsequently in the form of in-depth factor analysis that considers individual Q Sorts and the respective colleges represented in this study.

Initial Evaluations – Descriptive Statistics

As presented in the preceding chapter, members of the senior leadership from three colleges were asked to sort 41 cards containing words and phrases within a defined sorting distribution. The distribution was comprised of nine columns with corresponding values between -4 and +4. By placing cards in those columns of the distribution, the participants in this study indicated the extent to which they agreed or disagreed that the word or phrase on the card described the nature of financial resource allocation at their institutions. The value of -4 corresponded to “Strongly Disagree,” and the value of +4 represented “Strongly Agree,” with gradations of agreement signified by numbers in between. Numeric values were assigned to the individual words and phrases as determined by in which columns participants placed cards bearing those words and phrases. Utilizing factor analysis, those values served as the basis for generating understanding about the environment of organizational behavior in which decisions about the allocation of financial resources take place.

Table 4 portrays the mean value ascribed to each word or phrase by college and overall. As an initial indicator of the variance in values associated with each word and phrase Table 4 also reports the range in mean values for each item, calculated as the difference between the maximum and minimum of the three item-value means from each college. Those differences varied from a low of 0.10 to 4.20. That wide variation in the differences between colleges in terms of mean item value indicated the potential for uncovering distinctions among the institutions.

Table 4. Mean Values for Q Sort Items with Analysis of Variance *F* Ratios across Colleges

Acrimonious	0.245	-2.50	-3.00	-3.00	-2.78	0.50
Ambiguous	0.171	-1.13	-0.60	-1.00	-0.94	0.53
Bureaucratic	0.604	-1.50	-1.60	-2.20	-1.72	0.70
Collaborative	0.228	1.88	1.40	2.00	1.78	0.60
Complacent	1.455	-2.00	-3.20	-2.00	-2.33	1.20
Crisis-driven	5.545 *	-1.50	-1.60	2.00	-0.56	3.60
Data-informed	0.879	2.00	1.00	2.40	1.83	1.40
Dominated by a few	0.035	-0.75	-0.80	-1.00	-0.83	0.25
Entrepreneurial	13.821 **	2.50	4.00	-0.20	2.17	4.20
Ethical	1.515	3.00	1.80	2.60	2.56	1.20
Formalized	1.934	-0.75	-0.40	0.40	-0.33	1.15
Futile	1.021	-3.00	-1.80	-2.20	-2.44	1.20
Goal-driven	3.084	3.38	2.40	2.40	2.83	0.98
Hierarchical	1.140	-0.50	-0.60	-1.80	-0.89	1.30
Hostile	0.480	-3.75	-3.40	-3.60	-3.61	0.35
Imaginative	6.425 **	-0.13	2.60	0.20	0.72	2.73
Impact-oriented	0.363	2.38	2.60	1.80	2.28	0.80
Inclusive	2.014	0.00	0.20	1.40	0.44	1.40
Insular	1.403	-2.25	-1.40	-1.60	-1.83	0.85
Long-term perspective	0.158	0.50	1.00	0.40	0.61	0.60
Misguided	0.463	-2.50	-3.00	-3.00	-2.78	0.50
Mission-driven	0.260	3.50	3.80	3.60	3.61	0.30
Necessary	2.465	1.25	0.00	1.80	1.06	1.80
Neglected	3.728 *	-2.38	-1.20	-2.60	-2.11	1.40
Outward-looking	9.100 **	0.13	2.20	0.20	0.72	2.08
Participatory	1.467	1.00	0.40	1.60	1.00	1.20
Political	2.965	-2.00	-0.20	-1.60	-1.39	1.80
Principle-based	1.517	2.25	0.80	1.40	1.61	1.45
Priority based	2.286	3.13	2.20	2.20	2.61	0.93
Rational	1.795	1.38	0.40	1.80	1.22	1.40
Reactive	0.006	-0.50	-0.40	-0.40	-0.44	0.10
Resistant to change	1.795	-1.63	-2.80	-2.60	-2.22	1.18
Resource-driven	0.350	1.75	1.00	2.00	1.61	1.00
Risk-averse	8.081 **	-0.38	-4.00	-0.80	-1.50	3.63
Self-serving	0.422	-2.13	-1.80	-2.60	-2.17	0.80
Structured	0.221	0.00	0.20	-0.40	-0.06	0.60
Successful	0.689	1.38	1.80	0.80	1.33	1.00
Territorial	2.479	-2.00	-0.60	-2.60	-1.78	2.00
Timely	4.452 *	0.38	1.40	0.40	0.67	1.03
Transparent	2.935	0.63	0.40	2.20	1.00	1.80
Trusted	0.503	0.88	0.80	1.60	1.06	0.80

* $p < 0.05$

** $p < 0.01$

The diversity of perspectives among colleges regarding the words and phrases inherent in Table 4 is readily evident in a comparison of Figures 6 and 7. Figure 6, which presents in descending order the mean value, overall, for each word and phrase, seems to imply uniform rationality in the manner with which participants rated the words and phrases in their respective Q Sorts. High mean values are associated with words and phrases that might reasonably represent idealized characterizations of the allocation of financial resources, and low mean values are paired with words and phrases that describe undesirable conditions for resource allocation. In Figure 7, however, the broad range of perspectives becomes evident when adding to the overall means for each Q Sort item the individual means by college. A general degree of commonality exists among the individual college means for items at the extreme ends of Figure 7, but deviations, in some cases wide deviations, are evident away from the extremes. As specific examples,

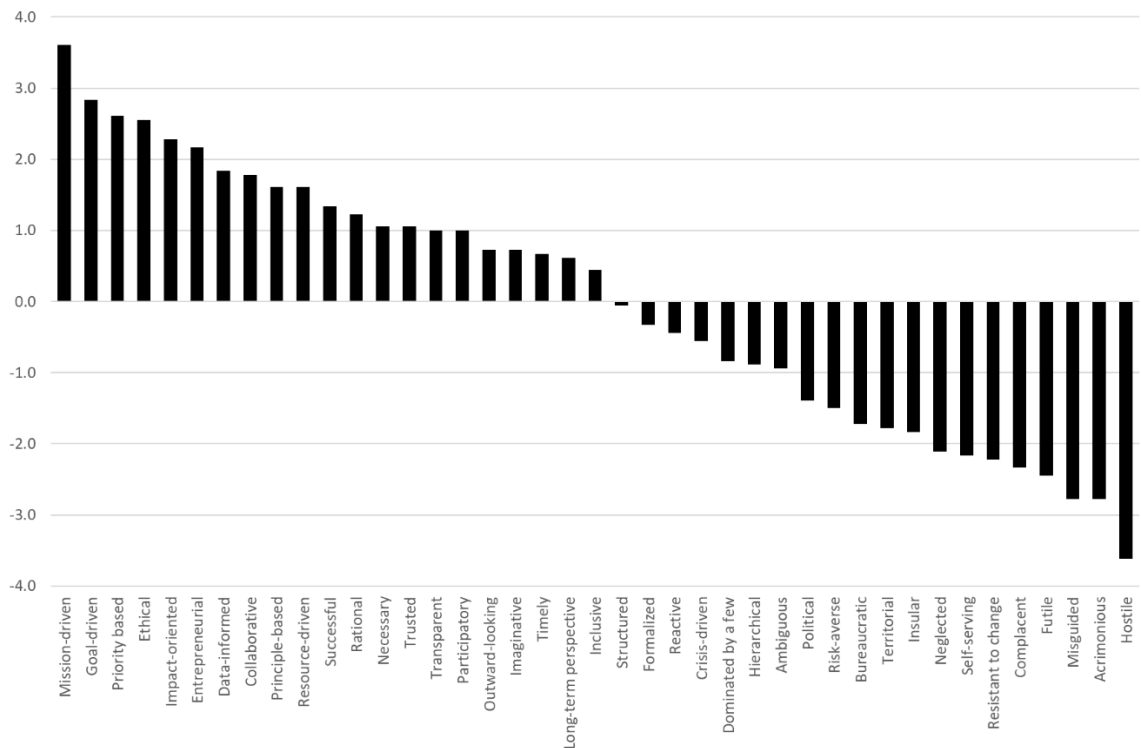


Figure 6. Mean Item Value across All Q Sorts for Individual Q Sort Items

the six significantly different means associated with Metropolis College are readily visible in the form of extended blue bars across the figure. Similarly, the significantly different mean value associated with the phrase “crisis-drive” for Promontory College is noticeably represented by prominent red bar extending above the horizontal axis on the right half of the figure.

As also depicted in Table 4, the differences among colleges in terms of mean item value for each word and phrase was assessed using a one-way analysis of variance (ANOVA). The resulting *F* ratios ranged from 0.01 to 13.82. Seven of 41 of those ratios

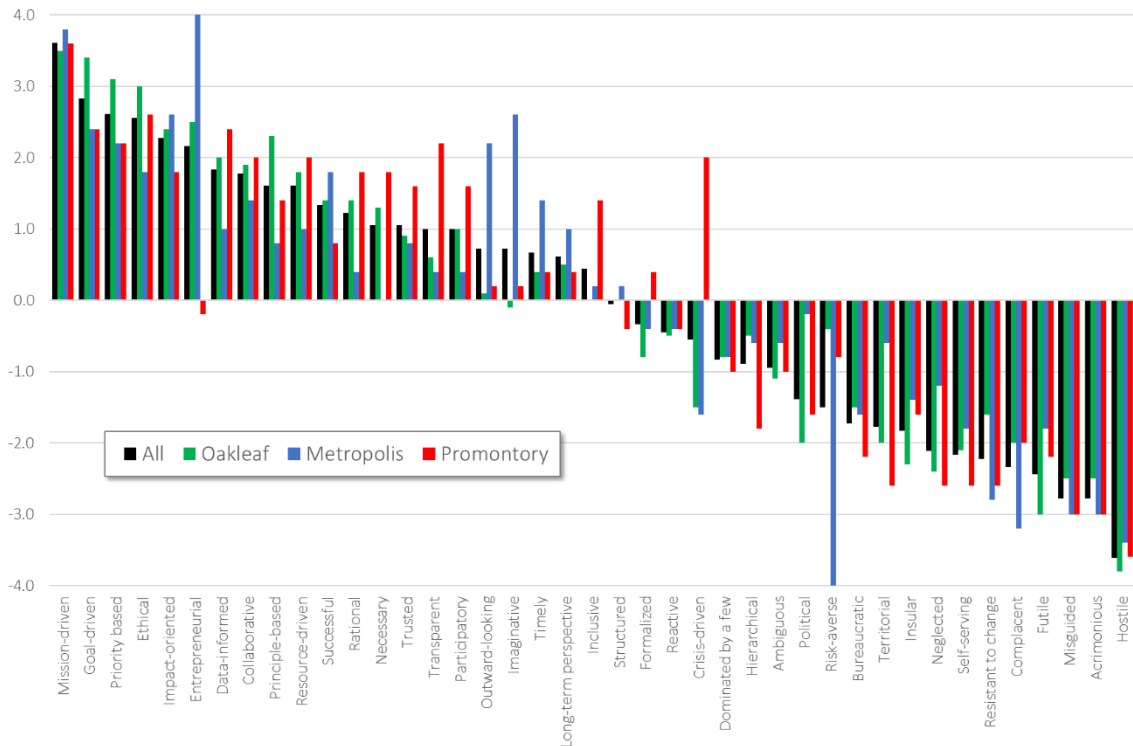


Figure 7. Mean Item Values for Individual Q Sort Items Overall and by College

exceeded the critical value of $F_{(0.05, 2, 15)} = 3.682$, with three of those seven surpassing the higher significance value of $F_{(0.01, 2, 15)} = 6.359$. Patterns associated with those significant differences suggested the potential existence of distinctions among institutions on the

basis of characterizations of organizational behavior. For example, as shown by the means in Table 4, the three significant differences at the $\alpha = .01$ level are associated with Metropolis College (as are three of the remaining four variances in the means that are significant at the $\alpha = .05$ level), and pertain to the words “entrepreneurial,” “outward-looking,” and “risk-averse” (with the mean value of -4 indicating a high degree of willingness to assume risk). Those descriptors imply that Metropolis College is a college

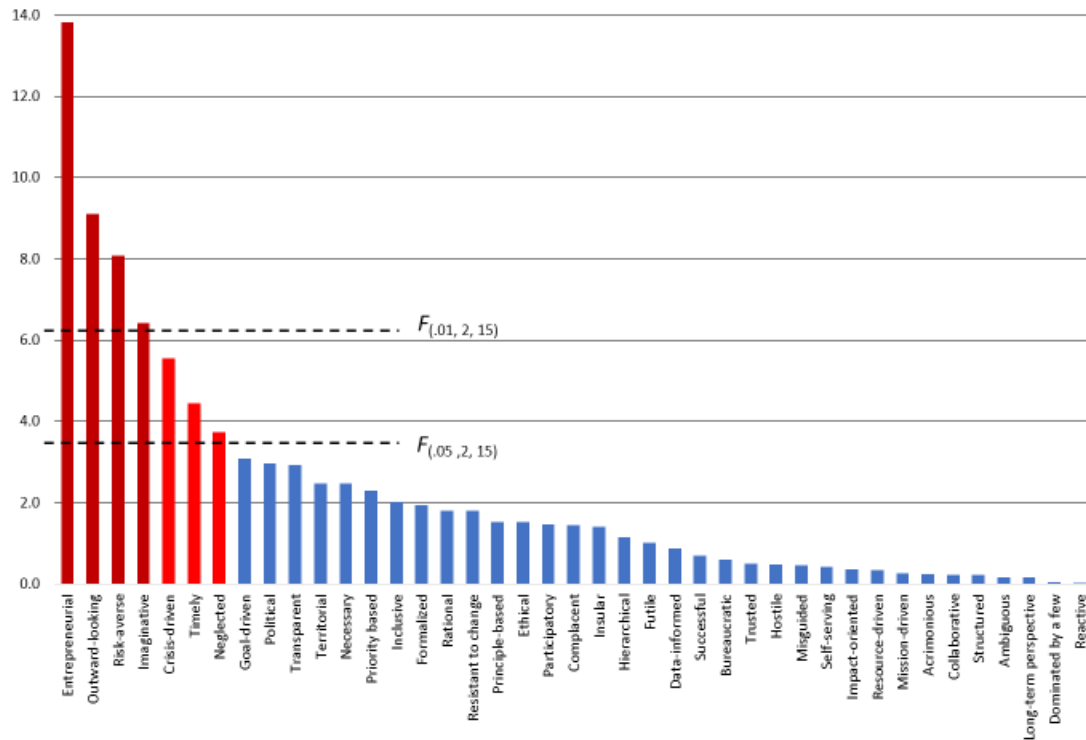


Figure 8. Analysis of Variance F Ratios for Q Sort Item Values

with an innovative bent, cognizant of the environment in which it operates, and not reticent to take on risk to advance its purposes. In contrast, hinting at a less robust institutional nature, the significant difference not associated with Metropolis College was found with Promontory College and the phrase, “crisis-driven.” In addition to Table 4,

the F ratios related to these mean differences among the colleges are also visually depicted in Figure 8.

Factor Analysis

Building upon the results of the descriptive statistics and analysis of variance that suggested that, to some degree, distinguishing difference existed among the three colleges on the dimensions assessed by the Q Sort exercise, factor analysis was employed to further examine the depth of the differences that may exist. The factor analysis described here was a three stage process: (a) drawing upon correlations among the multiple Q Sorts in this study, reducing those to a smaller number of factors, (b) based on the relative weights of Q Sorts associated with each factor, creating factor-specific values for each of the 41 Q Sort items, and (c) utilize the characterization of the factors inferred from the factor-specific values for the Q Sort items to interpret and understand the nature of organizational behavior related to the allocation of financial resources at the respective colleges. The analyses described below were accomplished with the use of PQMethod, specialized software adapted for Q Methodology factor analysis on personal computers.

Aggregate Analysis – Factor Analysis 1

Factor analysis was conducted on all 18 Q Sorts collected for this study. Centroid factor analysis assessed the intercorrelations of the Q Sorts and extracted factors for further analysis. An initial set of three factors was extracted, relying on the rule of thumb proposed by Watts and Stenner (2012) of requesting one factor for every 6-8 Q Sorts, and

due to the inclusion of three colleges in this study. See Table 5 for the resulting table of unrotated factor loadings.

Table 5. Unrotated Factor Loadings - Factor Analysis 1

	Factor 1	Factor 2	Factor 3	<i>h</i>²
m170726	0.8073	0.3887	0.1577	0.8277
k170726	0.6372	0.4100	0.1802	0.6066
m170801	0.5562	0.2390	0.0503	0.3690
c170802	0.8868	0.1407	0.0155	0.8064
c170717	0.8385	0.2855	0.0758	0.7904
MR170430	0.8860	-0.1190	0.0175	0.7995
EH170430	0.9131	-0.0881	0.0104	0.8417
JH170430	0.8673	-0.0386	0.0027	0.7537
WB170430	0.8853	0.1232	0.0115	0.7990
BD170430	0.8800	0.0582	0.0018	0.7778
CO170430	0.8255	0.2084	0.0372	0.7262
JW170430	0.6271	-0.3365	0.1357	0.5249
TW170430	0.5316	-0.1951	0.0438	0.3226
nf170709	0.6927	-0.1945	0.0435	0.5195
cm170709	0.8236	-0.2963	0.1029	0.7768
jh170709	0.7652	-0.0965	0.0118	0.5949
pm170709	0.7947	-0.3177	0.1197	0.7468
jc170709	0.7659	-0.1419	0.0239	0.6073
Eigenvalue	11.1049	0.9703	0.1156	
Variance (%)	0.6169	0.0539	0.0064	
Cum Var (%)	0.6169	0.6708	0.6773	

Several sets of criteria, summarized below, were considered for determining the number of factors for subsequent rotation and factor analysis. Despite the desirability of equating the number of factors with the number of colleges in the study, no reasonable basis existed for doing so. In particular, the low Eigen Value associated with Factor 3 and the negligible degree of variance explained by Factor 3 offered appropriate cause for excluding that factor from further analysis.

Table 6. Selection Criteria for Number of Factors

	Factor 1	Factor 2	Factor 3
Based on Eigenvalue > 1.0	Yes	Maybe	No
2+ Significant Factor Loadings	Yes	No	No
<i>No. of Significant Factor Loadings</i>	<i>16</i>	<i>0</i>	<i>0</i>
<i>Sig (p < .01) = 2.58 X (1/18^{.5}) = 0.6081</i>			
Humphrey's Rule	Yes	No	No
<i>Cross-product two highest > S.E. x 2</i>			
<i>S.E. x 2 = (1/18^{.5}) x 2 = 0.4717</i>			
<i>Cross-product of two highest loadings</i>	<i>0.8097</i>	<i>0.1594</i>	<i>0.0284</i>

Two of the three sets of rationales summarized in Table 6 for determining the number of factors to retain for rotation failed to support inclusion of more than one factor in the analysis. Employing the guideline of retaining all factors with Eigen Value values of greater than 1.0, however, the Eigen Value for Factor 2 was deemed sufficiently close to that commonly used threshold to include it, along with Factors 1, in further analysis. With the factors selected, varimax rotation was used because of the inherent statistical strength of the procedure for maximizing the variance explained by the ultimate factor rotations (Brown, 1980; Watts & Stenner, 2012). Table 7, below, summarizes the resulting factor loadings.

Table 7. Rotated Factor Loadings -
Factor Analysis 1

Q Sort	Factor 1	Factor 2
m170726	0.3243	0.8353 X
k170726	0.1855	0.7346 X
m170801	0.2431	0.5544
c170802	0.5517	0.7084 X
c170717	0.4176	0.7812 X
MR170430	0.7285 X	0.5182
EH170430	0.7272 X	0.5592
JH170430	0.6599 X	0.5640
WB170430	0.5626	0.6946 X
BD170430	0.6032	0.6435 X
CO170430	0.4608	0.7159 X
JW170430	0.6879 X	0.1824
TW170430	0.5216	0.2205
nf170709	0.6388 X	0.3309
cm170709	0.8040 X	0.3460
jh170709	0.6249 X	0.4520
pm170709	0.7975 X	0.3106
jc170709	0.6564 X	0.4193

The X's beside the rotated factor loadings above denote the Q Sorts that were selected for creating the factor estimates, and indicate to which factor the Q Sorts were assigned. A threshold of 0.60 for the factor loading was used to determine which Q Sorts to include in the determination of the factor estimates. The assignment of Q Sorts to factors could have been determined by the statistical significance of Q Sort factor loadings. In that case, significant factor loadings at $p < .01$ would be those with values greater than 0.40. The threshold of 0.60 was selected, however, to facilitate the creation of factor estimates on the basis of Q Sorts situated more closely to the factor axes (Watts & Stenner, 2012). One Q Sort (BD170430) had factor loadings in excess of 0.60 on both factors. In that case, that Q Sort was assigned to the factor on which it had the higher

factor loading (Factor 2). For two Q Sorts (m170801 and TW170430) the factor loadings on neither factor surpassed the threshold. As a consequence, those Q Sorts were excluded from the determination of the factor estimates. Figure 9 contains a visual

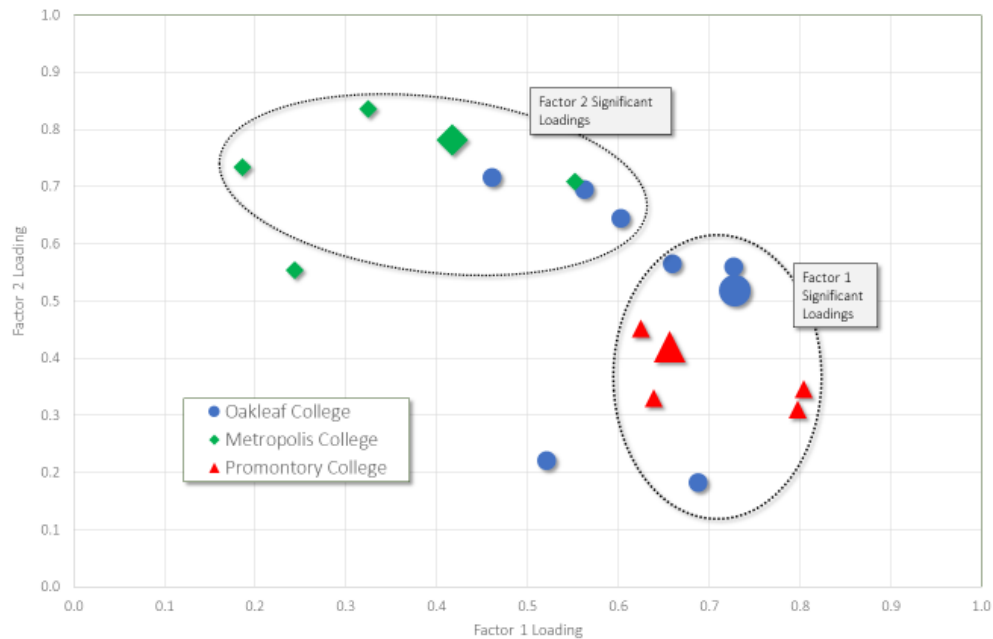


Figure 9. Q Sort Factor Loadings Based on All Q Sorts

representation of the two factors in two-dimensional space and the positioning of the Q Sorts relative to those factors on the basis of their respective factor loadings.

In Figure 9, each Q Sort is designated by a distinct marker and positioned on the chart according to the coordinates implied by the respective factor loadings of the Q Sort. The horizontal, X axis serves as the scale for Factor 1 factor loadings, and the vertical, Y axis marks the values for Factor 2 factor loadings. Since factor loadings are related to

degree of correlation between Q Sorts and factors, the conceptual range for factor loadings runs from zero to 1.0.

As indicated in the legend, the college to which each Q Sort corresponds is identified by the shape and the color of the markers. A larger size for three markers, one from each college, distinguishes those from the others. Those larger markers represent the factor loadings for the presidents from the three colleges. Those were specifically identified to facilitate envisioning the strengths of the factor loadings and their positions relative to others from their institutions. Two ovals, one for each factor, circumscribe those Q Sorts with significant factor loadings (i.e., greater than 0.60) on those factors. As mentioned above, two Q Sorts, one from Oakleaf College and one from Metropolis College failed to satisfy the threshold of 0.60, and those are positioned outside the ovals. Especially noteworthy in Figure 9, in consideration of the research question for this study of whether varying degrees of graduation and retention rates correspond with differing qualities of institutional organizational behavior, are the exclusive affiliations of the Q Sorts for Promontory College and Metropolis College with Factor 1 and Factor 2, respectively. In contrast, the Q Sorts for Oakleaf College straddle the two factors. Elaboration on and further assessment of these observations will follow.

Toward that end, the identities of the factors served as a means for understanding differences among the colleges in terms of perceptions and attitudes related to organizational-behavior dimension of the allocation of financial resources. As described above, factor estimates are essentially synthetic Q Sorts derived from the relative weightings of the Q Sorts affiliated with the factors. Factor estimates are created using a weighted-average process to calculate, from the item values of each Q Sort affiliated with

the factor, the factor-specific values for each Q Sorts item. For the two factors derived from this analysis, Table 8 presents the array of factor values that constitute the two respective factor estimates.

Table 8. Factor Array Estimates

No.	Statement	Factor 1	Factor 2	Diff.
1	Acrimonious	-4	-3	-1
2	Ambiguous	-1	-1	0
3	Bureaucratic	-2	-2	0
4	Collaborative	2	2	0
5	Complacent	-2	-4	2
6	Crisis-driven	0	-3	3
7	Data-informed	3	2	1
8	Dominated by a few	-1	-1	0
9	Entrepreneurial	1	4	-3
10	Ethical	4	3	1
11	Formalized	-1	0	-1
12	Futile	-3	-2	-1
13	Goal-driven	4	3	1
14	Hierarchical	-1	-1	0
15	Hostile	-4	-4	0
16	Imaginative	0	3	-3
17	Impact-oriented	2	4	-2
18	Inclusive	1	0	1
19	Insular	-2	-2	0
20	Long-term perspective	0	1	-1
21	Misguided	-4	-3	-1
22	Mission-driven	4	4	0
23	Necessary	2	0	2
24	Neglected	-3	-2	-1
25	Outward-looking	0	2	-2
26	Participatory	1	1	0
27	Political	-2	0	-2
28	Principle-based	3	0	3
29	Priority based	3	3	0
30	Rational	2	2	0
31	Reactive	0	-1	1

No.	Statement	Factor 1	Factor 2	Diff.
32	Resistant to change	-3	-3	0
33	Resource-driven	3	1	2
34	Risk-averse	-1	-4	3
35	Self-serving	-3	-2	-1
36	Structured	0	0	0
37	Successful	1	2	-1
38	Territorial	-2	-1	-1
39	Timely	0	1	-1
40	Transparent	1	1	0
41	Trusted	2	0	2

These factor estimates served as one basis for developing characterizations of the factors and delineating the qualitative differences between factors. The difference column (i.e., “Diff.”), for example, in the table above provided a quick reference for evaluating differences between the two factors on the basis of the respective values assigned to each Q Sort statement by each factor.

A more structured comparison of the two factors in terms of statement values is presented in Table 9, below. That table focuses attention on the salient differences in factor identities by disaggregating the statements, or words and phrases, into meaningful categories based on the differences in the values assigned to those statements by each factor. For each factor the table indicates the words or phrases that were ranked at the extreme: -4 or +4. It then shows those items with higher rankings than on the other factor, and with lower ratings than on the other factor. Dark blue highlighting identifies statements for which the difference in ranking is three or more, and the lighter blue denotes those items for which the difference in ranking is two. Asterisks on the rows of certain words and phrases also identify the statistical significance of the difference in

Characterizations of perceptions of financial resource allocation associated with each factor were created on the basis of the data contained in the two preceding tables. Key features, distinguishing the two factors are outlined in Table 10, below. The characterizations do not comment on every difference identified through factor analysis and creation of factor estimates, as reported in the two preceding tables, but highlight those items deemed most illustrative for defining the differences.

Table 10. A Comparison of Factor Profiles Related to Perception of Financial Resources

FACTOR 1	FACTOR 2
<ul style="list-style-type: none"> ▪ <u>Crisis-driven</u>. Resource allocation is more prone to the influence of crises than as characterized by Factor 2. The array value of 0 (“Neither Agree nor Disagree”) suggests that crises are not typically associated with resource allocation, but the statistically significant difference in values for this item implies a marked distinction between factors in terms of the influence of crises. ▪ <u>Principle Based</u>. The high value of 3 and statistically significant difference suggest the guiding principles constitutes a dominant factor in the allocation process. Statistically significant differences associated with negative values for “[not] Territorial” (-2), “[not] Self-serving” (-3) and “[not] Political” (-2) also point to a principled 	<ul style="list-style-type: none"> ▪ <u>Entrepreneurial</u>. The highest value of 4 and a statistically significant difference in value associated with this item implies that financial resource allocation is oriented toward pursuing and exploiting opportunities for the benefit of the institution and not bounded by defined principles or common practices. ▪ <u>Imaginative</u>. The high item value of 3 and statistically significant difference indicate that resource allocation is not constrained by convention or conducted as a rote activity. This could be seen as corresponding closely with the entrepreneurial spirit featured above. ▪ <u>Outward-looking</u>. The positive value of 2 and significant difference on this item suggests that allocation of financial resources is conducted

process focused on institutional commonweal.

- Necessary. Based on the high statistical difference and value of two, resource allocation is countenanced as a necessary and important institutional activity. This perspective of the importance of a process for allocation of resources receives further emphasis from the statistical significance of the -3 value for “Neglected” (meaning not neglected).
- Trusted. Also a significant difference, this implies resource allocation is perceived as a process with integrity, that is respected. This appears to align with perspective of a process that is principle-based and important.

with greater cognizance of the broader environment in which the institution operates and sensitivity to effectively responding to and interacting with factors outside the college. This also aligns with entrepreneurship and imagination.

- [not] Risk-averse. The extreme value of -4 and statistically significant difference suggest that, with Factor 2, resource allocation is distinguished by a willingness to take on risk.
- [not] Complacent. The statistically significance difference associated with the ultimate negative value of -4 for this item implies that resource allocation is prompted by high motivation and action-oriented.

Two distinctly different images of financial resource allocation emerged. The perspective offered by Factor 1 is of a financial decision-making process that is conventional in nature, perhaps even staid. It is viewed as necessary and important. It is principles-based in support of the institutional common good as implied by a rejection of territorialism, self-service and political orientation. As a consequence, the process is one that is trusted and respected. Although a statistically two-point differential between that and the Factor 2 value for that item intimate that a condition significant difference was not found between the two factors in terms of the respective values assigned to the item “Resource-driven,” the high value of 3 associated with Factor 1, and the of financial decision making associated with Factor 1 may be one of tight resources. Support for that interpretation is offered by the significant difference between the two factors related to the item “Crisis-driven.” In summary, the Factor 1 view of financial resource allocation

may be of a process that is conservative, considerate, thoughtful, and motivated by a sense of purpose and obligation.

In contrast, the characterization inferred from the factor estimation for Factor 2 is of a process that is vibrant and broad-based. The allocation of financial resources is actuated by a high sense of motivation. It is imbued with an entrepreneurial spirit and imagination, and eschews the confinement of associated with “standard practice.” In addition, the vision associated with financial decision making is not confined to the borders of the campus, but is outward-looking, sensitive to the surrounding environment and how to most effectively interact with it. Financial planning and decision making related to Factor 2 is also not confined by reticence to take risks. In summary, the Factor 2 manner of financial resource allocation is action-based, impact-oriented, imaginative and entrepreneurial.

Refinement of Distinctions – Factor Analysis 2

The distinct separation of Metropolis College and Promontory College between Factor 1 and Factor 2 in the factor analysis, described above, appeared to encourage support for the notion that institutions that are similar in key regards, except retention and graduation rates, can be differentiated on the basis of dimensions of organizational behavior associated financial resource allocation. That could not be firmly concluded, however, because of the inclusion of Q Sorts from Oakleaf College in the factor analysis and factor estimation.

To determine the clarity of the distinction between Metropolis and Promontory Colleges, a second factor analysis was conducted that excluded Q Sorts from Oakleaf

College. Below in Table 11 are the unrotated factor loadings extracted from the initial intercorrelations of Q Sorts that excluded Oakleaf College. Under normal circumstances, applying the guidelines, described above, for identifying the number of factors to select for rotation and subsequent factor analysis, Factor 2 would be disqualified for inclusion in the rotation. With specific regard to the “rule of thumb” that recommends including factors with Eigen Values greater than 1.0, the Eigen Value of 0.6881 for Factor 2 fell short of that threshold. Recognizing, however, that the low Eigen Value was more a function of the low number of Q Sorts than the strength of the individual Factor 2 factor loadings, a decision was made to proceed with the rotation of both factors. The relative high communality values for the Q Sorts also implied a reasonable probability of the Q Sorts finding association with factors that might emerge from the ensuing factor rotation.

Table 11. Unrotated Factor Loadings - Factor Analysis 2

Q Sort	Factor 1	Factor 2	<i>h</i>²
m170726	0.8808	-0.3408	0.8920
k170726	0.6345	-0.4166	0.5761
m170801	0.5834	-0.1632	0.3670
c170802	0.9205	-0.1057	0.8585
c170717	0.8529	-0.2211	0.7763
nf170709	0.6592	0.2609	0.5026
cm170709	0.8242	0.3388	0.7941
jh170709	0.7935	0.2125	0.6748
pm170709	0.7286	0.2046	0.5727
jc170709	0.7564	0.2045	0.6140
Eigenvalue	5.9400	0.6881	
Variance (%)	0.3300	0.0382	
<i>Cum Var (%)</i>	<i>0.3300</i>	<i>0.3682</i>	

Varimax rotation was applied to the unrotated factor loadings. The resulting rotated factor loadings are presented below in Table 12. All of the Q Sorts loaded significantly on one of the two factors. The significant factor loadings produced by the rotation lent validation to the decision to retain all Q Sorts and both factors for rotation. The X's beside the factor loadings indicate the factor to which the respective Q Sorts were assigned for purposes of factor estimation.

Table 12. Rotated Factor Loading - Factor Analysis 2

	Q Sort	Factor 1	Factor 2	
1	m170726	0.3701	0.7951	X
2	k170726	0.1905	0.7347	X
3	m170801	0.3228	0.5126	X
4	c170802	0.6113	0.6964	X
5	c170717	0.4836	0.7364	X
14	nf170709	0.6904	X	0.2733
15	cm170709	0.8383	X	0.3022
16	jh170709	0.7308	X	0.3752
17	pm170709	0.6773	X	0.3376
18	jc170709	0.6979	X	0.3562

The following plot, in Figure 10, was created to acquire an ocular understanding of the extent to which correlations of Q Sorts from Oakleaf College with Q Sorts from the other two colleges influenced the factor loadings for the Q from Metropolis and Promontory Colleges. The small markers in the figure below identify the factor loadings for the Q Sorts that were originally calculated with inclusion Q Sorts from Oakleaf College in the factor analysis. The larger markers show the factor loadings as derived with the exclusion of Oakleaf College Q Sorts from the analysis. The arrows denote the direction of the consequent change in the factor loadings.

The exclusion of Oakleaf College generally resulted in an increase in loadings on Factor 1, and a decline in loadings on Factor 2. Two exceptions to that trend were found. The factor loadings for Q Sort 2 from Metropolis College remained essentially unchanged, and, contrary to the general trend, a marked decline occurred in the Factor 1 loading for Q Sort 17 from Promontory College. Overall, as a result of removing Oakleaf College Q Sorts from the analysis, the cluster of Q Sort factor loadings for Promontory College became tighter, while the grouping of factor loadings for Q Sorts from Metropolis College expanded slightly.

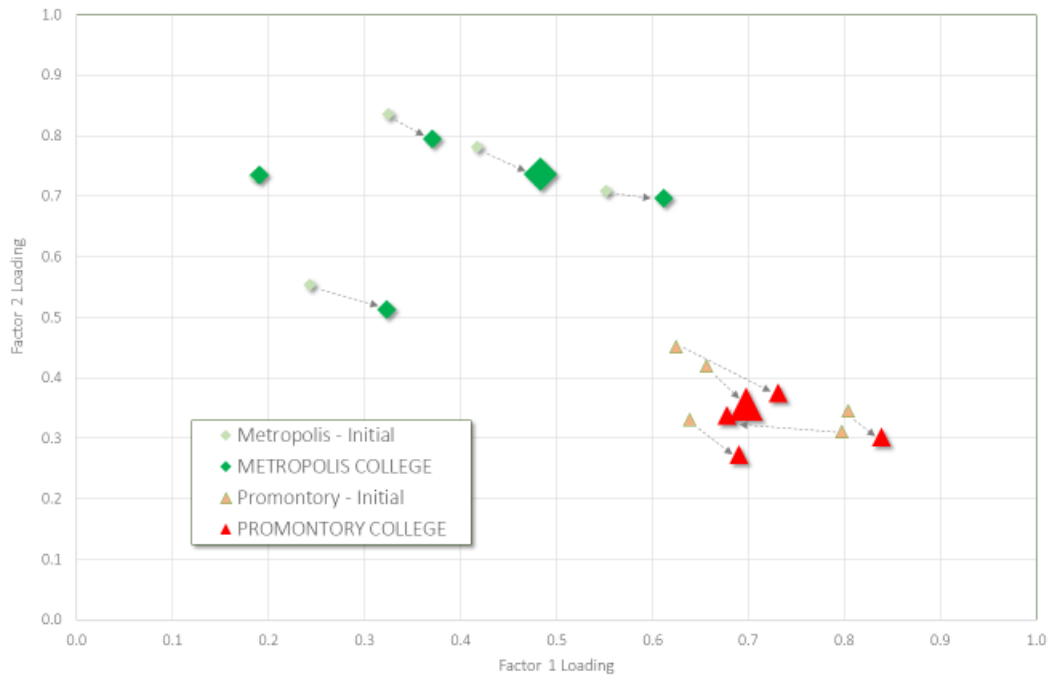


Figure 10. Changes in Q Sort Factor Loadings with Exclusion of Oakleaf College

Figure 11, below, offers an uncluttered portrayal of Q Sort factor loadings. In this presentation of the factor loading, the exclusive clustering of Q Sorts from the two colleges on the separate factors is readily apparent.

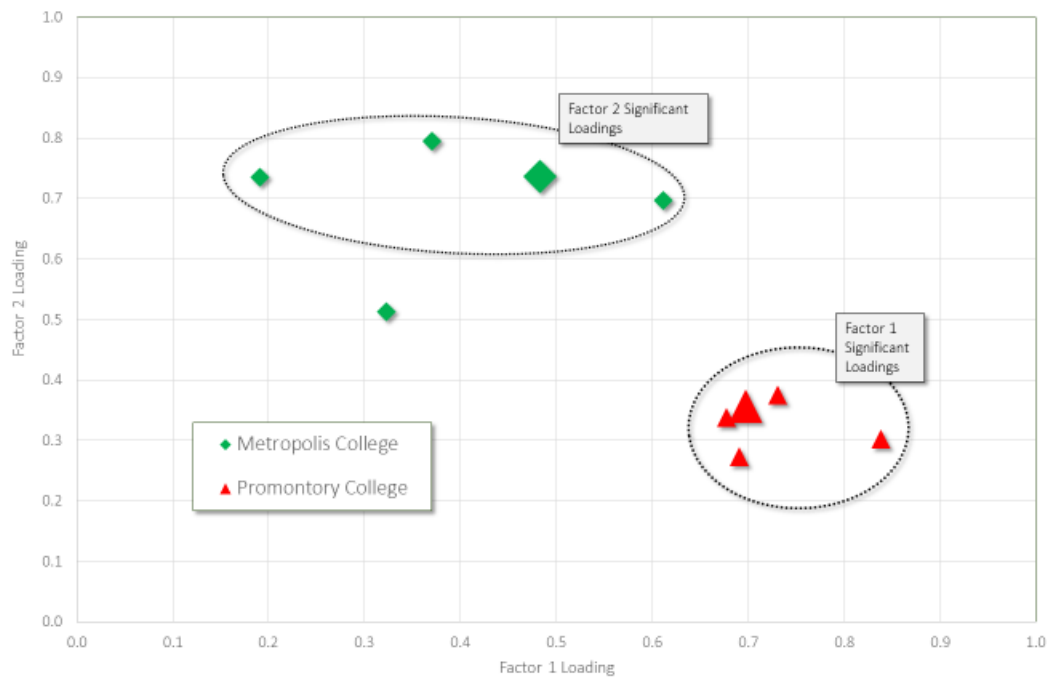


Figure 11. Q Sort Loadings Excluding Oakleaf College

The effects portrayed in the figures above from excluding Oakleaf College from the factor analysis are detailed in Table 13, below. This table provides a comparison of the factor estimates and arrays of statement values obtained from both factor analyses cited here: (a) the original including Q Sorts from Oakleaf College, and (b) the more recently described factor analysis excluding those Oakleaf College Q Sorts. Two separate groupings of data are presented, one for each factor. For each factor, under the subheading “Array Value” Table 13 provides three columns of data. The first column,

labeled “All” contains the statement values for each word and phrase derived from the factor analysis based on all three colleges. The second column entitled “x-Oak” provides the item values for each word and phrase calculated in the factor analysis that included Q Sorts from only Metropolis and Promontory Colleges. The third column reports, for each statement, the difference between those two item values.

Highlighting is used to draw attention to those statements for which the difference in the factor array value between the two factor analyses was equal to or greater than 2. For example, the item value derived for “Crisis-driven” in the first factor analysis that included Q Sorts from Oakleaf College was zero. In the subsequent factor analysis, from which Oakleaf College data were excluded, the calculated value for that same phrase rose to 3, an increment of 3. That change, of that magnitude, implies that the inclusion of Oakleaf College in the earlier factor analysis masked the perception by individuals from Promontory College (the sole institution associated with Factor 1 of this second factor analysis) that the allocation of financial resources was substantively influenced by crises. For Item 28, “Principle-based,” the value assigned to that phrase declined by 2 points, from 3 to 1 from the first factor analysis to the second. Influence of Oakleaf College Q Sorts can then be inferred from that change. That change implies that the principle-based perspective of the allocation of financial resources resided more prominently with individuals from Oakleaf College than those at Promontory College.

The decline in the rating for “Resource-drive,” Item 33, from 3 to 1, indicates that the pecuniary focus associated with financial resource allocation, concluded from the first factor analysis, may be more accurate of participants from Oakleaf College than Promontory College.

Table 13. Factor Array Values and Differences in Values with and without Oakleaf College

No.	Statement	All	x-Oak	Change	No.	Statement	All	x-Oak	Change
1	Acrimonious	-4	-4	0	1	Acrimonious	-3	-3	0
2	Ambiguous	-1	-1	0	2	Ambiguous	-1	-1	0
3	Bureaucratic	-2	-2	0	3	Bureaucratic	-2	-2	0
4	Collaborative	2	2	0	4	Collaborative	2	2	0
5	Complacent	-2	-2	0	5	Complacent	-4	-3	1
6	Crisis-driven	0	3	3	6	Crisis-driven	-3	-3	0
7	Data-informed	3	4	1	7	Data-informed	2	2	0
8	Dominated by a few	-1	-1	0	8	Dominated by a few	-1	-1	0
9	Entrepreneurial	1	0	-1	9	Entrepreneurial	4	4	0
10	Ethical	4	4	0	10	Ethical	3	3	0
11	Formalized	-1	0	1	11	Formalized	0	0	0
12	Futile	-3	-2	1	12	Futile	-2	-2	0
13	Goal-driven	4	3	-1	13	Goal-driven	3	3	0
14	Hierarchical	-1	-2	-1	14	Hierarchical	-1	-1	0
15	Hostile	-4	-4	0	15	Hostile	-4	-4	0
16	Imaginative	0	0	0	16	Imaginative	3	3	0
17	Impact-oriented	2	2	0	17	Impact-oriented	4	4	0
18	Inclusive	1	2	1	18	Inclusive	0	0	0
19	Insular	-2	-1	1	19	Insular	-2	-2	0
20	Long-term perspective	0	0	0	20	Long-term perspective	1	1	0
21	Misguided	-4	-4	0	21	Misguided	-3	-4	-1
22	Mission-driven	4	4	0	22	Mission-driven	4	4	0
23	Necessary	2	1	-1	23	Necessary	0	0	0
24	Neglected	-3	-3	0	24	Neglected	-2	-2	0
25	Outward-looking	0	0	0	25	Outward-looking	2	2	0
26	Participatory	1	1	0	26	Participatory	1	0	-1
27	Political	-2	-2	0	27	Political	0	0	0
28	Principle-based	3	1	-2	28	Principle-based	0	1	1
29	Priority based	3	3	0	29	Priority based	3	3	0
30	Rational	2	2	0	30	Rational	2	1	-1
31	Reactive	0	-1	-1	31	Reactive	-1	-1	0
32	Resistant to change	-3	-3	0	32	Resistant to change	-3	-3	0
33	Resource-driven	3	1	-2	33	Resource-driven	1	1	0
34	Risk-averse	-1	-1	0	34	Risk-averse	-4	-4	0
35	Self-serving	-3	-3	0	35	Self-serving	-2	-2	0
36	Structured	0	0	0	36	Structured	0	0	0
37	Successful	1	1	0	37	Successful	2	2	0
38	Territorial	-2	-3	-1	38	Territorial	-1	-1	0
39	Timely	0	0	0	39	Timely	1	2	1
40	Transparent	1	3	2	40	Transparent	1	0	-1
41	Trusted	2	2	0	41	Trusted	0	1	1

The last change of two or more points in the assigned item value between the two instances of factor analysis is associated with the word, “Transparent.” It increased from

a value of 1 (suggesting near ambivalence) to 3, implying relatively strong agreement among the leadership of Promontory College that financial decision making is characterized by transparency. That focus on transparency at Promontory College may have been overshadowed in the first factor analysis by a lower emphasis on transparency at Oakleaf College.

On Factor 2, no differences of two points or more were found in item values between the two instances of factor analyses, and, of the 41 words and phrases, only eight exhibited differences of -1 or +1. One change of note, however, was the one-point decline, from -3 to -4, for the word, “Complacent.” The noteworthiness of that single-point change was derived from the recognition that special importance is typically affiliated with items assigned to the extremes of the sorting distribution, either -4 or +4, since the ends of the distribution will accommodate on three, each, of the 41 words and phrases. Consequently, this change implied the disassociation (in consideration of the negative item value) of complacency constituted a strongly-held opinion among individuals from Promontory College.

A comparison of the characteristics associated with these two factors is presented below in Table 14. It should be noted that, due to the exclusion of Oakleaf College from this factor analysis, and because the Q Sorts from the remaining two colleges loaded exclusively on one factor or the other, this is also a comparison of the perceptions at Metropolis College versus Promontory College regarding the allocation of financial resources. The table employs the same formatting as that used above to compare factors from the first factor analysis. For each factor (college), that table identifies the items that were at the extreme (-4 or +4) ends of the sorting distributions, and those words or

Table 14. A Comparison of Factors on the Basis of Distinguishing Q Sort Statements - Factor Analysis 2

FACTOR 1 (Promontory College)					FACTOR 2 (Metropolis College)			
Statement	No.	Array	Diff.		Statement	No.	Array	Diff.
Items Ranked at +4					Items Ranked at +4			
Data-informed	7	4	2 *		Entrepreneurial	9	4	4 **
Ethical	10	4	1		Impact-oriented	17	4	2
Mission-driven	22	4	0		Mission-driven	22	4	0
Items Higher than Other Factor					Items Higher than Other Factor			
Crisis-driven	6	3	6 **		Imaginative	16	3	3 **
Transparent	40	3	3 **		Outward-looking	25	2	2 **
Risk-averse	34	-1	3 **		Timely	39	2	2
Inclusive	18	2	2 **		Political	27	0	2 **
Rational	30	2	1		Territorial	38	-1	2 **
Trusted	41	2	1		Successful	37	2	1
Necessary	23	1	1 **		Long-term perspective	20	1	1
Participatory	26	1	1		Hierarchical	14	-1	1
Insular	19	-1	1		Neglected	24	-2	1 *
Complacent	5	-2	1		Self-serving	35	-2	1
					Acrimonious	1	-3	1
Items Ranked Lower than Other Factor					Items Ranked Lower than Other Factor			
Successful	37	1	-1		Ethical	10	3	-1
Long-term perspective	20	0	-1		Rational	30	1	-1
Hierarchical	14	-2	-1		Trusted	41	1	-1
Neglected	24	-3	-1 *		Necessary	23	0	-1 **
Self-serving	35	-3	-1		Participatory	26	0	-1
Impact-oriented	17	2	-2		Insular	19	-2	-1
Outward-looking	25	0	-2 **		Complacent	5	-3	-1
Timely	39	0	-2		Data-informed	7	2	-2 *
Political	27	-2	-2 **		Inclusive	18	0	-2 **
Territorial	38	-3	-2 **		Transparent	40	0	-3 **
Imaginative	16	0	-3 **		Crisis-driven	6	-3	-6 **
Entrepreneurial	9	0	-4 **					
Items Ranked at -4					Items Ranked at -4			
Hostile	15	-4	0		Hostile	15	-4	0
Misguided	21	-4	0		Misguided	21	-4	0
Acrimonious	1	-4	-1		Risk-averse	34	-4	-3 **
* $p < .05$								
** $p < .01$								

phrases for which the related item values were either greater than or less than the item value in the other factor. Dark blue is used to highlight those items for which the difference was 3 or more points, and lighter blue designates differences of 2 points. Asterisks are used to identify those differences that are significantly different at the $p < .05$ level or at the level of $p < .01$.

In large measure, the overarching themes that emerged from the first factor analysis to characterize the two factors are generally equivalent to those found in the second factor analysis that excluded Oakleaf College. As referenced above, however, notable differences were observed for items in Factor 1 that altered the characterization, above of Factor 1. In addition, the table above indicates that the subtle influence of minor, one-point changes in item values resulted in differences between the factors that were not observed in the first factor analysis. The fundamental differences between the two factors (colleges) are summarized below in Table 15. This is the same summary table that was used above to describe differences between Factors 1 and 2 from the first factor analysis. Aspects of it have been revised to reflect the factor estimates from this second factor analysis.

Table 15. A Comparison of Factor Identities Related to Perceptions of Allocations of Financial Resources based on Factor Analysis 2

<p><i>(Revised from the first factor analysis that included all institutions to reflect differences found in the second factor analysis that excluded Oakleaf College)</i></p> <p>Key: Strikethroughs = Deletions; Highlights = Additions</p>	
<p>FACTOR 1 (Promontory College)</p> <ul style="list-style-type: none"> ▪ Data-informed. In the second factor analysis, the Factor 1 value for this item rose from 3 to 4, and rendered the difference between that and the Factor 2 value statistically significant. The value of 4 ("Strongly Agree") assigned to this item underscores the 	<p>FACTOR 2 (Metropolis College)</p> <ul style="list-style-type: none"> ▪ <u>Entrepreneurial.</u> The highest value of 4 and a statistically significant difference in value associated with this item implies that financial resource allocation is oriented toward pursuing and exploiting opportunities for the benefit of the institution and not bounded by

perception that an important aspect of financial resource allocation is reliance on pertinent data to make and objective, informed decision.

- Crisis-driven. Resource allocation is ~~more prone~~ highly susceptible to the influence of crises than as characterized by Factor 2. The array value of 0 (“Neither Agree nor Disagree”) +3 suggests relatively strong agreement that crises are ~~not typically~~ frequently associated with resource allocation, ~~but~~ and the large and statistically significant difference in values for this item implies a marked substantial distinction between factors in terms of the influence of crises.
- Inclusive. The array value of 2 that differs significantly with the corresponding value for Factor 2 suggests stronger perception of collaboration and welcoming of other voices in the allocation of financial resources.
- ~~Principle Based.~~ The high value of 3 and statistically significant difference suggest the guiding principles constitutes a dominant factor in the allocation process. [Note: In this second factor analysis, Factor 1 and Factor 2 shared the same value of 1 for “Principle-based.”] Statistically significant differences associated with negative values for “[not] Territorial” (-2), “[not] Self-serving” (-3) and “[not] Political” (-2) also point to a principled and inclusive process focused on institutional commonweal.
- Transparent. The relatively high value of 3 and the statistical

defined principles or common practices.

- Imaginative. The high item value of 3 and statistically significant difference indicate that resource allocation is not constrained by convention or conducted as a rote activity. This could be seen as corresponding closely with the entrepreneurial spirit featured above.
- Outward-looking. The positive value of 2 and significant difference on this item suggests that allocation of financial resources is conducted with greater cognizance of the broader environment in which the institution operates and sensitivity to effectively responding to and interacting with factors outside the college. This also aligns with entrepreneurship and imagination.
- [not] Risk-averse. The extreme value of -4 and statistically significant difference suggest that, with Factor 2, resource allocation is distinguished by a willingness to take on risk.
- ~~[not] Complacent.~~ The statistically significance difference associated with the ultimate negative value of -4 for this item implies that resource allocation is prompted by high motivation and action-oriented. [Note: In the second factor analysis, a significant difference was not found between the two factors on the basis of this item.]

significance of the difference with Factor 2 on this item implies a greater focus on openness and clarity in the allocation of financial resource allocation than in Factor 2. This focus on transparency parallels the quality of inclusiveness, noted above.

- Necessary. Based on the high statistical difference and value of two, resource allocation is countenanced as a necessary and important institutional activity. This perspective of the importance of a process for allocation of resources receives further emphasis from the statistical significance of the -3 value for “Neglected” (meaning not neglected).
- Trusted. ~~Also a significant difference, this implies resource allocation is perceived as a process with integrity, that is respected. This appears to align with perspective of a process that is principle based and important.~~ [Note: In there second factor analysis, no significant difference existed between the two factors on this item.]

Similar to the observation at the conclusion of the assessment of the differences found between Factors 1 and 2 in the first factor analysis, this second factor analysis revealed factors that were noticeably distinct. With the exclusion of Oakleaf College from the analysis, the differences assessed here are not only between two factors, but between two separate institutions. Although, as prefaced above, the overarching

differences between factors (and now colleges) in this second factor analysis are comparable to the differences between factors in the first factor analysis, nuanced revisions to those differences emerged in the second factor analysis by focusing only on Metropolis and Promontory Colleges.

The characterization of the allocation of financial resources that was portrayed in Factor 1 of this second factor analysis, and implied to exist at Promontory College, is, overall, as described above: conservative, thoughtful, and motivated by a sense of obligation. High item values for “Necessary” and “[not]Neglected” point to the importance placed on adhering to a regular practice of financial planning. A strong spirit of collaboration was indicated by the emergence of “Inclusive,” as a significant item, and one complementary to the qualities of “[not] Territorial,” and “[not] Political. The inclusion of “Transparent” as a distinguishing facet of the financial resource allocation process broadened the perception of collaboration and mutual involvement. Excluding Oakleaf College from the second factor analysis revealed the greater extent to which financial decision making at Promontory College is influenced, perhaps even disrupted, by crises. That revelation may provide explanation for why “Data-informed” emerged as a feature that differentiated Promontory College from Metropolis College—in order to preempt crises, as well as effectively direct the operation of the institution, eminent importance is place on making financial decisions on the basis of pertinent data. In summary, the allocation of financial resources at Promontory College was perceived as a process that was logical, fair, collaborative and open. Emphasis on “Crisis-driven” implied an impression of vulnerability associated with the process, and perhaps with the institution.

In contrast, financial resource allocation at Metropolis College was perceived to be much like that described by Factor 2 in the first factor analysis: action-oriented and vigilantly watchful for opportunities inside and outside the institution that could be exercised for the benefit of the college. It is animated by the combination of an entrepreneurial spirit and imagination; and eschews the confinement associated with “standard practice.” In addition, those at Metropolis College perceive financial planning and decision making to be unfettered by reticence to take risks. In summary, financial resource allocation was characterized as action-based, impact-oriented, imaginative and entrepreneurial.

Oakleaf College Only – Factor Analysis 3

As implied by the initial factor analysis and the discussion above, Oakleaf College was found to be more difficult to uniformly characterize in terms of the process for financial resource allocation than Metropolis and Promontory Colleges. The Q Sorts from Oakleaf College were widely dispersed in terms of factor loadings. Also, as shown in the results of the first factor analysis, of the eight Oakleaf College Q Sorts, four were affiliated with Factor 1, three were associated with Factor 2, and one Q Sort exhibited no significant factor loading on either factor.

The dispersion of Oakleaf College Q Sorts on a plot of associated Q Sort factor loadings illuminates clearly the diverse relationships among those Q Sorts that prevents a succinct, uniform characterization of perceptions of financial resource allocation at that institution.

An intense examination of the plotted factor loadings, however, appeared to reveal discernable patterns among at least some of the Q Sorts. Those patterns are marked in Figure 12, below.

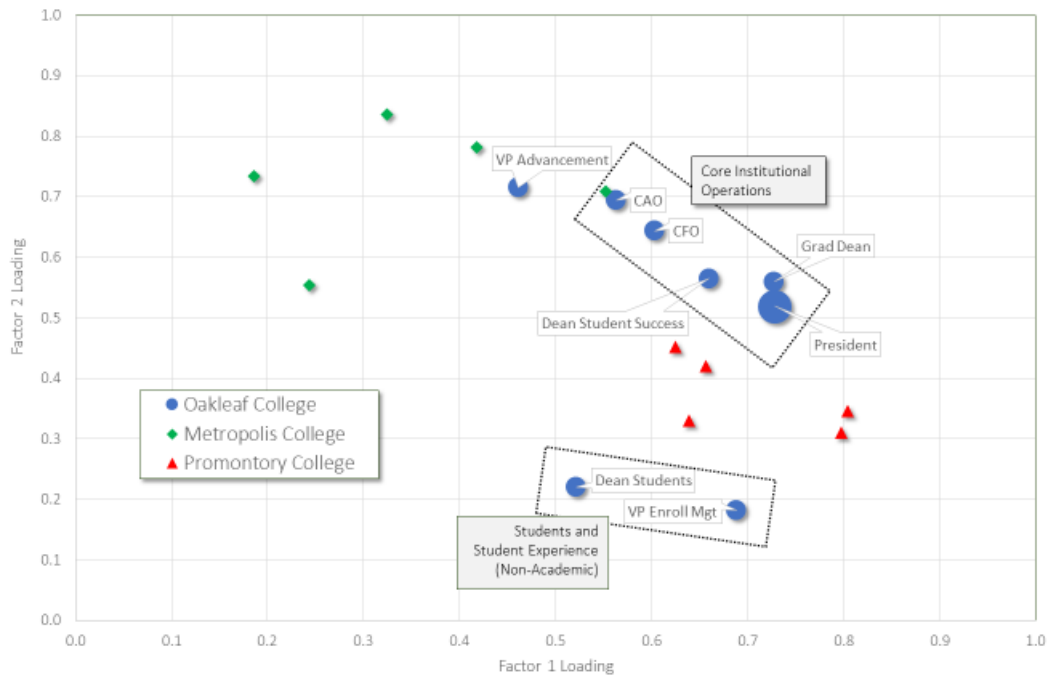


Figure 12. Q Sort Factor Loadings Based on All Q Sorts, with Groupings for Oakleaf College

Plausible logic for the groupings seemed to emerge when considering the roles of the individuals at Oakleaf College whose Q Sort factor loadings are plotted here. The five Q Sorts in the larger group are associated with the president, chief academic officer, chief financial officer, graduate dean, and a position unique to Oakleaf College responsible for student success strategies. Those five individuals each possess responsibilities that broadly reach across the core operational facets of the college that determine overall institutional success. The smaller “group” of two Q Sorts corresponds

to two individuals whose responsibilities more narrowly pertain to students in terms of recruitment and student experience. The eighth Q Sort is positioned on its own. That Q Sort is associated with the vice president for advancement. The separate positioning of that Q Sort could be reflective of the compartmentalized nature of the roles played at institutions, particularly small colleges, by advancement officers.

Based on these separate groupings for factor loadings for the Q Sorts from Oakleaf College, in order to obtain a factor estimate, or at least a proxy estimate, that pertained solely to Oakleaf College, the initial factor analysis was re-run. As an

Table 16. Rotated Factor Loadings - Factor Analysis 3

Q Sort	Factor 1	Factor 2
m170726	0.3243	0.8353
k170726	0.1855	0.7346
m170801	0.2431	0.5544
c170802	0.5517	0.7084
c170717	0.4176	0.7812
MR170430	0.7285	X 0.5182
EH170430	0.7272	X 0.5592
JH170430	0.6599	X 0.5640
WB170430	0.5626	X 0.6946
BD170430	0.6032	X 0.6435
CO170430	0.4608	0.7159
JW170430	0.6879	0.1824
TW170430	0.5216	0.2205
nf170709	0.6388	0.3309
cm170709	0.8040	0.3460
jh170709	0.6249	0.4520
pm170709	0.7975	0.3106
jc170709	0.6564	0.4193

unconventional deviation from the initial factor analysis, however, following the rotation of factors, only the five Q Sorts in the “Core Institutional Operations” group were selected for further analysis, and those were all assigned to Factor 1. The factor loadings are presented in Table 16.

The factor estimates produced from that factor analysis are tabulated below.

These estimated item values correspond only to Oakleaf College. In the table below the Q Sort items are listed in descending order by item value for the purpose of readily identifying those items that are most related to the allocation of financial resources at Oakleaf College, and those that are not. For identification purposes, those items with values at the extremes of the sorting distribution, with value of -4, -3, +3, and +4, are enclosed in boxes.

Table 17. Oakleaf College Core Leadership Factor Estimate

Statement	No.	Factor Array
Entrepreneurial	9	4
Goal-driven	13	4
Mission-driven	22	4
Ethical	10	3
Impact-oriented	17	3
Priority based	29	3
Resource-driven	33	3
Collaborative	4	2
Data-informed	7	2
Participatory	26	2
Principle-based	28	2
Trusted	41	2
Long-term perspective	20	1
Necessary	23	1
Rational	30	1

Statement	No.	Factor Array
Successful	37	1
Timely	39	1
Formalized	11	0
Imaginative	16	0
Inclusive	18	0
Outward-looking	25	0
Reactive	31	0
Structured	36	0
Transparent	40	0
Ambiguous	2	-1
Dominated by a few	8	-1
Hierarchical	14	-1
Resistant to change	32	-1
Risk-averse	34	-1
Bureaucratic	3	-2
Complacent	5	-2
Crisis-driven	6	-2
Insular	19	-2
Territorial	38	-2

Futile	12	-3
Misguided	21	-3
Neglected	24	-3
Political	27	-3
Acrimonious	1	-4
Hostile	15	-4
Self-serving	35	-4

Tables 18 and 19, below, present comparisons of values for the Q Sort items from factor estimates for Oakleaf College with Metropolis College, and for Oakleaf College and Promontory College, respectively. Comparing Oakleaf College with Metropolis College, both were perceived to be highly entrepreneurial, sharing the highest item value of +4 on that item. Other items of the factor estimate, however, offer the suggestion that

entrepreneurial nature of Oakleaf is more conservative than that at Metropolis College. Specifically, Oakleaf College was perceived to be less “Imaginative” and less “Outward-looking.” Values of 0 for both of those Q Sort items do not imply that Oakleaf College is unimaginative or not outward-looking, but is less prone toward those qualities than Metropolis College. Similarly, on a third item, “Risk-averse,” that could complement to entrepreneurialism, Oakleaf College is portrayed in the factor estimate as somewhat willing to assume risk but to a lesser degree than Metropolis College. Related to the more conservative nature of Oakleaf College implied by lower values for “Imaginative” and “Outward-looking” and being less inclined to take on risk, Oakleaf College was found to be more “Resource-driven” in the allocation of financial assets.

Turning to a comparison of Oakleaf College with Promontory College, the high Q Sort item value for “Entrepreneurial” for Oakleaf College marks a clear difference between the two institutions. Although Oakleaf College was found to be more conscious of resources in financial decision making than Metropolis College, Oakleaf College was far from Promontory College in terms of “Crisis-driven.” The item value of -2 for Oakleaf College, in fact, suggests a low likelihood that Oakleaf College is influenced by crises in the allocation of financial resources. The item value of -1 on “Resistant to change” indicated a general openness to change on the part of Oakleaf College that contrasted with the reluctance to change implied by the value of +2 for Promontory College on that same item. On two of the items that portrayed a spirit of openness and collaborative involvement in the allocation of financial resource at Promontory College, “Inclusive” and “Transparent,” the values for those items at Oakleaf College suggested different inclinations. Q Sort values of 0 on both of those items for Oakleaf College

Table 19. Comparison of Factor Estimates: Oakleaf College (*Core Leadership*) vs. Promontory College

Oakleaf College (Core Leadership)				Promontory College			
Statement	No.	Array	Diff.	Statement	No.	Array	Diff.
Items Ranked at +4				Items Ranked at +4			
Entrepreneurial	9	4	4 **	Data-informed	7	4	2
Goal-driven	13	4	1	Ethical	10	4	1
Mission-driven	22	4	0	Mission-driven	22	4	0
Items Higher than Other Factor				Items Higher than Other Factor			
Resource-driven	33	3	2	Crisis-driven	6	3	5 **
Resistant to change	32	-1	2 *	Transparent	40	3	3 **
Impact-oriented	17	3	1	Inclusive	18	2	2 **
Participatory	26	2	1	Rational	30	2	1
Principle-based	28	2	1	Insular	19	-1	1
Long-term perspective	20	1	1	Futile	12	-2	1
Timely	39	1	1	Political	27	-2	1
Reactive	31	0	1	Self-serving	35	-3	1
Hierarchical	14	-1	1				
Territorial	38	-2	1				
Misguided	21	-3	1				
Items Ranked Lower than Other Factor				Items Ranked Lower than Other Factor			
Ethical	10	3	-1	Goal-driven	13	3	-1
Rational	30	1	-1	Impact-oriented	17	2	-1
Insular	19	-2	-1	Participatory	26	1	-1
Futile	12	-3	-1	Principle-based	28	1	-1
Political	27	-3	-1	Long-term perspective	20	0	-1
Self-serving	35	-4	-1	Timely	39	0	-1
Data-informed	7	2	-2	Reactive	31	-1	-1
Inclusive	18	0	-2 **	Hierarchical	14	-2	-1
Transparent	40	0	-3 **	Territorial	38	-3	-1
Crisis-driven	6	-2	-5 **	Misguided	21	-4	-1
				Resource-driven	33	1	-2
				Resistant to change	32	-3	-2 *
Items Ranked at -4				Items Ranked at -4			
Acrimonious	1	-4	0	Acrimonious	1	-4	0
Hostile	15	-4	0	Hostile	15	-4	0
Self-serving	35	-4	-1	Misguided	21	-4	-1
* $p < .05$							
** $p < .01$							

These observations do not provide a uniformly singular characterization of perceptions of financial resource allocation at Oakleaf College. Those do, however, denote areas of difference between the other two colleges; and the differences found for

all three institutions cast a glimmer of light on the potential for better understanding student persistence and graduation rates on the basis of alternative conceptualizations of postsecondary institutions.

Conclusion

These results identified clear distinction between two of the three colleges in the study in terms of perceptions of dimensions of organizational behavior associated with financial resource allocation. Specific discussion of these findings relative to research questions for this study and implications of these results for future study are contained in the following chapter.

CHAPTER 5

ANALYSIS AND CONCLUSIONS

Discussion of Results

The description of the contextual framework for this study cited Baecker's (2011) observation of the paradoxical nature of the university: "rich in diversity, always elusive in its most distinguished qualities, and nonetheless robust as few other things in society" (p.2). This study endeavored to introduce a modicum of understanding to one elusive element of colleges and universities: the relationship, if any, between organizational behavior and student outcomes. That was explored with the guidance of the following research questions:

1. To what extent do members of the senior leadership within an institution share common perspective on the dimensions of organizational behavior related to the decision-making processes used to allocate financial resources?
2. How do dimensions of organizational behavior influence the manner with which members of the senior leadership make decisions regarding the allocation of financial resources?
3. To what extent are variations in rates of persistence and graduation rates among institutions that are otherwise similar in terms of data reported to IPEDS and other commonly observed characteristics associated with discernable differences among the institutions in terms of dimensions of organizational behavior related to financial decision making?

This study cast illumination on the nature of organizational behavior as it related to the allocation of financial resources in three small colleges in New England. Varying

degrees of understanding relevant to the research questions emerged from this study. The results, relative to the research questions, and in summary, are discussed below. In addition, observations are offered about the limitations of the research. Also considered below are implications of the study and recommendations for future research.

Research Questions

Question 1. Common Perspective

The degree of commonality with which senior leadership at the colleges in this study associated dimensions of organizational behavior with the allocation of financial resources was explored through the use of Q Methodology factor analysis. Mixed results were found. The results showed rich commonality of perspective at two of the three institutions in this study. For those two institutions, Metropolis College and Promontory College, not only were common perspectives held, but distinct differences were found between those two colleges in terms of those commonly-held characterizations of financial decision making. In brief, allocation of resources at Metropolis College was characterized, as described above, as action-based, impact-oriented, imaginative and entrepreneurial; while the factor estimate for Promontory College depicted an orientation to financial decision making that was conservative, logical, fair, collaborative and transparent. A high value for “Crisis-driven” also implied a sense of financial vulnerability at Promontory College. These distinctions are discussed more fully in the following section.

A less unified perspective was found at the third institution, Oakleaf College. The results suggested the existence of shared points of view within subsets of the senior

leadership. The findings implied that the commonality within those subgroups arose from the relatedness of the roles of the subgroup members.

Question 2. Influence of Organizational Behavior

Responding to the second research question, discernably different dimensions of organizational behavior were associated with, and influenced how financial decision making occurred at Metropolis and Promontory Colleges. The results also highlighted differences between Oakleaf College and Metropolis College, and between Oakleaf College and Promontory College. As reported above, however, the research did not identify a uniform identity for Oakleaf College in terms of perceived dimensions of organizational behavior that uniquely distinguished that institution from the two other colleges. Rather, the results pointed to notable intersections between Oakleaf College and both Metropolis and Promontory Colleges in terms of dimensions of organizational behavior as characterized by factor analysis. Elaboration on these findings, by institution, follows.

Metropolis College

As summarized in the results, the substantive influences associated with the allocation of financial resources at Metropolis College included an entrepreneurial spirit, imagination, an outward-looking orientation, and a willingness to take risks. Information derived from interviews with participants in the Q Sort exercise at Metropolis College and from conversation following the exercise corroborated and offered insights into those results.

The entrepreneurial nature of financial decision making at Metropolis College was suggested in the observation of one individual that “structure exists [in the composition of the college], but it [the allocation of financial resources] is not a structured process.” Those who were interviewed, for example, portrayed the budget development process as one unbounded by rigid parameters for either process or for the manner or nature of individual contribution. Members of the senior leadership were not limited to offering suggestions for, or perspectives about, their circumscribed areas of purview, but they deliberated as a team about wide-ranging matters of importance to the institution. Even the finalization of the annual budget, as described by the president, reflected the focus on results rather than process, as is common to entrepreneurialism. She noted that the concluding prioritization of items in the budget was handled by the chief financial officer (CFO). “I don’t know how it works,” she said, “but it does.” The president emphasized that the ability for Metropolis College to conduct financial planning in that manner reflected her implicit trust in the CFO and his professional acumen, as well as the mutual trust and respect that exists among the senior leadership.

The allocation of financial resources was conducted with collective sensitivity to the circumstances surrounding higher education as expressed by one individual that, “This is highly dynamic time in higher education. Colleges must be nimble and willing to change.” Insights offered in interviews supported the theme of Metropolis College as entrepreneurial in the fulfillment of its mission, looking for needs that the college could fill, or opportunities that could be exercised. One person reflected that no “products” that differentiated Metropolis College from the broad cohort of small colleges in the region or the nation existed at the time of the appointment of the current president. That individual

then recounted the variety of programs that had been added to the offerings of the college since that time that did attend to unmet educational needs, whether in terms of academic content or populations served, and that advanced the position of the College.

The imaginative nature associated with Metropolis College, revealed in the factor analysis was evident through the course of the interviews. It complemented the entrepreneurial bent of the college. One person opined that the imagination of the college was founded not only on the visionary nature of those leading and associated with it, but guided by the institution's formal Vision Statement that was updated every three years. Commenting on vision and imagination, the president proposed that, to be successful, colleges must be willing to challenge the status quo, and must recognize the need to constantly improve. The determination of the president to challenge the status quo and establish an imaginative tone for the institution was illustrated in a vivid description of what might emerge from the intuition of the president: "Things might explode!" In further elaboration, the person who offered that illustration highlighted instances in which the president's intuition and imagination ignited the imagination of others to creating new initiatives, effectively problem solve, or apply useful novelty to operational needs.

Interview content from Metropolis College aligned with the factor analysis that identified "Outward-looking" in the allocation of financial resources as a distinguishing characteristic for the college. One individual posited that the leadership of the institution maintained "laser" focus on the place of Metropolis College in higher education and action needed to remain relevant in the higher education landscape. With the intent of remaining relevant, individuals suggested that the college has focused on affordability, and more recently expanded its attention to improving graduation rates. The president

observed that she is personally committed, and has committed the institution, to always looking five years ahead. Multiple people commented in the interviews that the ultimate rationale for all institutional decision making was meeting the needs of students in terms of affordability, access, academics and student experience.

Information from interviews also corroborated the findings of the factor analysis that the college is willing to engage in risk to advance its purposes. Interviews revealed that, as an extraordinary “bet” on the future of Metropolis College, years in the past, at the appointment of the current president, the college spent nearly three-quarters of the endowment to invest in identified needs and strategically redirect the college. No one considered the risk-taking in which the college had engaged, or is likely to engage, as reckless or thoughtless. One individual pointed to the guidance and direction provided by the Vision Statement. Another qualified the nature of risk-taking more as entrepreneurial than assuming risk. The individual noted that the leadership of the college endeavored to mitigate risk by relying on thoughtful decision making informed by pertinent available information. Several people acknowledged that, in some cases, the willingness to take on risk did not lead to anticipated success. Others referred to those circumstances as learning experiences. One person described those situations as “pain points.” He suggested that the institution has come to recognize “pain points” as signals of gaps between plans and actual experience, and as a call to address constructive attention to closing those gaps.

Opinions offered in interviews suggested that, overall, Metropolis College had been well served by the dimensions of organizational behavior implied by the factor analysis and corroborated in the interviews. Areas of challenge, however, were also

uncovered in the interviews. One person proposed that the process of allocating financial resources would benefit from more formality. That person suggested that, due to the informality associated with the entrepreneurial manner of the college, some decisions were made based on incomplete information, or information necessary for making sound decisions was not fully disseminated among the leadership team. Another individual expressed the view that the expedient nature of entrepreneurial activity led to a perception of “back channel” financial decision making. That, according to the person offering the point of view, carried the prospect of individuals feeling alienated from the decision-making process or disadvantaged by the results of it. One person simply described isolated decisions as chaotic and lacking appropriate measure of consideration.

Promontory College

In contrast to Metropolis College, the results of this study described the allocation of financial resources at Promontory College as conservative, characterized by data-informed decision making and aversion to risk; inclusive, non-political and non-territorial; and thoughtfully transparent. A key distinction from Metropolis College (as well as Oakleaf College) was the strength of the assessment that financial decision making at Promontory College was sometimes driven by crises.

Interviews with members of the senior leadership at Promontory College cast light on a process that was structured and disciplined, corresponding to the characterization depicted through factor analysis. As described in the interviews, budgeting and strategic planning “was SMART,” with SMART being an acronym for “specific,” “measurable,” “achievable,” “realistic,” and “time-based.” Budget

development followed a specified format; and the primary contributors to the process were the budget advisory committee, comprised of three board members, three faculty members and the president's cabinet. One individual described the process as "professionally conducted by loyal leadership."

Financial planning consisted of presentations of ideas, with proposals for funding typically accompanied by data. The data were not just financial, but also data that appropriately described fundamental aspects of the funding request. Interviews with the senior leadership generally depicted a process primarily oriented toward satisfying day-to-day needs of the college. The notion of "Outward-looking," as described by one individual, was selectively applied to matters of the moment, on a case-by-case basis. He observed that a regular practice of incorporating ongoing consideration of external constituents and the environment of the college was not a natural institutional tendency.

Lack of engagement with risk on the part of Promontory College in the allocation of financial resources, as revealed in the factor analysis, was presented by one individual not as risk aversion but as "balancing the portfolio." That individual opined that, under appropriate circumstances, the college was willing to take on risky initiatives on the assumption that the risk would be off-set by less risk-taking in other facets of college operations. Other, or perhaps overlapping, portrayals found in the interviews suggested that the basis for the aversion to risk was not fully an unwillingness to countenance matters with great uncertainty. Rather, while discomfort with uncertainty served as large contributor to risk-aversion, that aversion was also attributed to the prevalence of reluctance to change in some quarters of the college.

Insights gained from the interviews revealed that the current president struggled to overcome inertia of the past despite being appointed to that position after years of respected service at Promontory College in other positions. “This is not who we are,” according to the interviews, was a common response to proposed changes. Different bases were ascribed to that attitude. One identified in the interviews was a general disdain for change. Change, in that case, was perceived as unacceptable disregard for matters of the past and present, rather than opportunities for increased effectiveness and success. Another perspective proposed that older faculty were not necessarily unwilling to change, but just guarded when confronted with the prospect of change.

A topic related to change that arose in one of the study interviews was the notion that “small” (as an institution) equated to “nimble.” In that interview, based on his experience at Promontory College, that individual offered the opposite perspective that “small” meant “plodding” and “deliberate” in order to ensure that quick, impulsive changes did not adversely affect the stability of college. Similarly, following one of the Q Sort exercises, in a conversation with an individual who found difficulty deciding how to categorize the words “Imaginative” and “Entrepreneurial,” he divulged that, despite the desirability of integrating those concepts into the activities of the college, the resources of the institution precluded doing so.

Transparency was independently proposed by several individuals as a key to success by Promontory College. They reported that dissemination of information has increased and occurred on a regular basis. The media for sharing information included, for example, but was not limited to informal, personal conversations, departmental and area gatherings, and formal, all-college meetings. One officer of the college

acknowledged the necessity, in some cases, of balancing transparency in communication with selective circulation of information that might raise concern. He suggested, however, that the latter did not preclude frank conversations, as warranted, about matters of importance. Another individual proposed that the importance of transparency also lay on its link with trust and credibility, two additional qualities she posited that were necessary for effective leadership. She suggested delivering on promises and consistency of action contributed to the establishment and maintenance of trust, and that transparency was the basis for informing others of promises delivered and consistent action.

Promontory College was uniquely distinguished from Metropolis College and Oakleaf College on the dimension of inclusiveness, as it applied to the allocation of financial resources. Multiple individuals described in the interviews the ubiquitous presence of inclusiveness at the college. One individual reflected on decades of service at Promontory College. She recalled that she came to the college as a temporary employee but was attracted to stay because of the “good work” being done by the college, spirit of inclusiveness, and her fascination with higher education. Another individual described a long and rewarding career that was facilitated by the inclusive culture of the institution. The president was credited for the contributions he made to the inclusive atmosphere at Promontory College by his example of purposeful engagement with faculty and staff members. He, too, expressed the gratification that he found, as president, in knowing the names of nearly every employee at the college.

Low item values associated with the Q Sort items of “Territorial” and “Political” (meaning *not*-Territorial and *not*-Political) complemented the distinction of Promontory College on the “Inclusive” dimension. One individual confirmed the lack of

territorialism in the allocation of financial resources by expounding on his lingering hesitation categorizing “Territorial” during the preliminary card sorting. He explained that he first decided the card containing “Territorial” belonged in the “Agree” category. He ultimately moved the card to the “Disagree” card pile when he realized that “Territorial” pertained to only one member, albeit a vocal one, of the leadership team.

The value for “Crisis-driven” represented a profound distinction for Promontory College as well as a defining measure. One member of the senior leadership team who had been in his position for approximately one year at the time of his participation in the study recalled that no “honeymoon period” accompanied his appointment. Critical issues requiring his attention were presented to him soon after his arrival on campus. Another individual, when confronted with the word “Reactive” during the Q Sort exercise, commented that serving on the leadership team of a small private college was equivalent to being “triage nurse, physician, and research scientist, all in one.” A third person succinctly proclaimed that serving in such a role at Promontory College was highly rewarding, but exhausting.

Although the estimated value for “Crisis-driven,” at +3, was a point away from the maximum value of +4, it differed markedly from the values for the same item at Metropolis College (-3) and Oakleaf College (-2). Of all the differences in this study, those were the most significant (Difference with Metropolis College: $z = -6.86, p < .001$; Difference with Oakleaf College: $z = -5.465, p < .01$). Those differences were significant, as well, in terms of somber noteworthiness. Promontory College was one of several small private colleges that, at the time of writing, recently announced intentions to cease operation in the immediate future due to financial exigency.

Oakleaf College

Providing an elaboration on the unique depiction of dimensions of organizational behavior associated with the allocation of financial resources at Oakleaf College was not possible since a factor pertaining solely to that college was not found through factor analysis. With that institution removed from the second factor analysis, certain characteristics related to Oakleaf College were surmised by the differences between the two analyses. Differences were more pronounced on Factor 1 which, in the second factor analysis corresponded exclusively with Promontory College. The differences between those two factor analyses are summarized in Table 13 on page 149.

Without Oakleaf College in the second analysis, the value for the item “Crisis-driven” changed from 0 to +3, implying a strong disinclination toward crisis-driven financial decision making at Oakleaf College. The value for “Principle-based” declined by two points, from +3 to +1, alluding to a relatively stronger principle-based influence on the allocation of financial resources at Oakleaf College. An identical difference, related to the term “Resource-driven,” similarly suggested that financial decision making at Oakleaf College was influenced by a comparatively higher level of consideration for resources. Finally, the increase in value for “Transparent” between the two factor analyses, from +1 to +3, suggested that the allocation of financial resources at Oakleaf College occurred with less attention to transparency.

In a comparison of all three colleges, the one item on which Oakleaf College most differed from the other two institutions was “Resource-driven,” with Oakleaf College perceived to be more oriented toward the conscientious use of resources in the course of

financial decision making. That position seemed ironic, at least in the case of comparison with Promontory College, but understandable from information learned in interviews with the senior leadership, and from a review of the institutional characteristics outlined in Chapter 3. (For simplicity in discussion dollar amounts are presented below as rounded figures.)

Prior to the current president of Oakleaf College, whose tenure there has been lengthy, the college experienced a history of annual deficits. At the time of her appointment, the current president inherited a projected budget deficit of approximately \$500,000 (which, through collaborative effort was averted by year end). More currently, compared with the other colleges, Oakleaf College registered lowest core revenue per student of the three colleges, slightly below Metropolis College, but more than \$2,000 below Promontory College. Endowment per student was also more than \$10,000 less than Metropolis, but almost \$4,000 more than Promontory College. Oakleaf College was not different in terms of percentage of students awarded institutional grant aid (essentially all students at all three institutions received some amount of institutional aid), but the average amount of institutional grant aid awarded by Oakleaf College exceeded that at Metropolis College by \$1,000 and at Promontory College by approximately \$3,000. Average cost of attendance (meaning, from an institutional perspective, net revenue per student) was lower than Promontory College by \$3,000 and \$500 less relative to Metropolis College.

Considering only the differences between Oakleaf College and Metropolis College, as described in the preceding chapter, those differences depicted Oakleaf College as more conservative. Although both colleges were perceived to be equally

entrepreneurial, Oakleaf College was found to be less imaginative, less outward looking and less inclined to risk (although not risk averse) than Metropolis College.

Information shared in the interviews suggested that the diminished values for “Imaginative” and “Outward-looking” may, in slight measure, reflect residual attitudes after a long history as an inward-looking institution, and a disrupted succession in the presidency due to illness that preceded the current president. One person offered the view that the prior president possessed a perspective that did not foster imagination. Another proposed that, due to the modest resources of Oakleaf College, necessity sometimes superseded imagination. Similarly, yet another individual suggested that limitations on time at a small institution occasionally curtailed the application of imagination. The lesser tendency toward “Outward looking” was also attributed to constraints on resources. “The agility required of small institutions does not always allow for a long-term view,” one individual opined.

On the topic of risk, one member of the leadership team at Oakleaf College assessed the posture of the institution by saying, “The college is not deterred by risk, but develops plans with an awareness of risk.” That “awareness of risk” may have contributed to the perception of unwillingness, or limited willingness to assume risk. Another person proposed that the willingness of the college to assume degrees of risk was essential to its success. Multiple individuals recounted an example of remarkable risk-taking at the institution that has assumed legendary status. At the time of the appointment of the current president, several attempts had been made to secure funding for the construction of a necessary new science building. Those attempts all failed. Soon after assuming her role at the institution, the new president, at a dinner with trustees,

announced that funding for the science building had been identified. All were surprised, including members of the president's cabinet, because there had been no advanced knowledge that such was the case. Three years later, at the christening of the newly constructed building, the president clarified the funding source: "I have the money for this magnificent new building. But it's all in your pockets." That stimulated an aggressive and successful fundraising campaign. It also instilled a "can-do" attitude in the community that served as a turning point for the college.

Comparing Oakleaf College with Promontory College revealed notable differences between those institutions in terms of the two Q Sort items, "Entrepreneurial" and "Crisis-driven." As reported above, Oakleaf College was perceived equally high with Metropolis College, and contrasted with Promontory College, in the application of an entrepreneurial spirit in the allocation of financial resources. The president described the orientation of Oakleaf College as strategically market-driven, continuously exploring opportunities. That attitude was reflected in interviews with senior leaders at the college as they cited multiple examples of entrepreneurial endeavors. One was the aggressive establishment of articulation agreements with surrounding community colleges that facilitated the ability of students to transfer from those colleges to complete degrees at Oakleaf College. Another was in terms of the response of the college to the perceived need among area medical professionals for a degree program in medical administration. In addition to recognizing that need, the college fostered the ability of students to attend it by teaching the classes at local hospitals at times conducive to the schedules of the students rather than on campus where and when holding classes would convenience the faculty.

Oakleaf College was perceived as exercising less transparency and inclusiveness in the allocation of financial resources than Promontory College. As observed in the results section, the value associated with both “Transparent” and “Inclusive,” of 0, did not indicate an avoidance or lack of the two qualities but ambivalence regarding the extent to which those characteristics were considered representative of financial decision making. Observations expressed in the interviews acknowledged that position. Following difficulty in assigning values to the related items of “Inclusive” and “Participatory,” one individual expressed the view that the college exhibited inconsistency in those qualities. Another observed that the president assumed responsibility for decision making, that she listened to points of view, “put the pieces together,” made a decision and then asked, “Everyone okay?” One person indicated that if there were anything that he could change at Oakleaf College that item would be the method of communication—to increase and broaden the dissemination of information. A related perspective offered in an interview included a summary recommendation: “More dialogue. More training. Increase transparency. Offer explanations. Avoid problems that arise from incorrectly assuming others are informed.”

Repeating the observation at the beginning of this section, discernable differences among the institutions emerged on the basis of the extent to which characteristics in the Q Sort exercise were perceived to be affiliated with the process of financial resource allocation at the colleges. Factor analysis showed Metropolis and Promontory Colleges to be distinctly different in term of the dimensions of organizational behavior reflected at those institutions. Oakleaf College was perceived to reflect characteristics that, in their

strength, differentiated that institution from the others, but on other dimensions Oakleaf College overlapped with Metropolis and Promontory Colleges. In all respects, insights derived from individual interviews indicated that the characteristics ascribed to each institution by factor analysis were reflected in varying degrees at the respective colleges. Those insights also affirmed that those characteristics differentially influenced the manner with which financial resources were allocated at those institutions.

Question 3. Retention and Graduation

The emergence of distinctly separate factor estimates related to dimensions of organizational behavior for two institutions, Metropolis College and Promontory College—that also differed in terms of rates of persistence and graduation—offer strength to Baird’s (1988) long-ago suggestion of the richness of opportunity for developing insights about student outcomes by better understanding the influence of organizational behavior on those outcomes. The extent to which the observed differences in dimensions of organizational behavior applied to financial decision-making explain differences in retention and graduation rates was not entirely determined by this study. Such determination was beyond the scope of this exploratory endeavor.

Anecdotal findings of this study did, however, illuminate potential for the existence of an association between dimensions of organizational behavior affiliated with the allocation of financial resources and rates of student persistence and graduation. The most sobering example from this study of the possibly consequential nature of the interplay between dimensions of organizational behavior and institutional outcomes is the circumstance of Promontory College. The predominance of crisis-driven decision

making along with difficulty in embracing change would seem to constitute a nearly sure formula for limiting the ability of an institution to support students in a manner that fosters robust levels of retention and graduation. Conceivably, however, the causal relationship could have been reversed: low rates of retention and graduation and consequent financial stress may have led to a sense of crisis that influenced financial decision making.

More favorable examples existed at the other two institutions. This study referenced the response by the current president of Metropolis College to the lack of “products” at that institution at the time of her appointment. The qualities implied by the terms “Entrepreneurial,” “Outward-looking,” and “Imaginative,” by the accounts of those who participated in this study, represent dimensions of organizational behavior that contributed to the establishment of meaningful opportunities for academic achievement by the students of that college. Exercising imagination, Metropolis College established a degree-completion program that allowed students to return to college and fulfill their aspirations of obtaining a degree. Toward that end, the needs of this unique category of students were taken into account in the development of the program. An advising program for these students was established, childcare assistance was developed, and classes for these students were scheduled at times that could be accommodated by the work and other responsibilities of the unique class of students. (As a fine point, by applying the typical criteria for calculating retention and graduation rates the accomplishments of these transfer students would not be reflected in those metrics.)

With respect to the “Impact-driven” dimension on which Metropolis College exceeded the other colleges, the president of that college magnified the impact of that

institution by adopting the practice of interviewing every final candidate who is considered for employment at that college. That practice was reported to have the benefit of instilling in each new employee, “directly from the top,” the vision and ethos of the college. By devoting time to those interviews, the president also impressed on each new employee that their roles at the college are important and contribute to the success of students.

Similar examples were found at Oakleaf College. The establishment of the medical administration program, referenced above, grew out of the entrepreneurial orientation of the college. In addition, Oakleaf College was differentiated from the other two colleges in terms of an item value for “Principle-based” that exceeded that of the other institutions. Interviews with individuals from that institution suggested that “Principle-based” did not narrowly describe practices associated with the decision-making process, but the overarching principles of the institution. Citing the motto of the institution, “Unity, serving neighbor without distinction,” reportedly permeated the fabric of the college. Individuals at all levels of the institution, guided by the motto, developed supportive relationships with students that fostered their educational experience inside and outside the classroom. By one account, housekeepers have been known to be so familiar with the schedules of students that, when they encountered them on campus during scheduled class time, they would ask with friendly concern, “Shouldn’t you be in class?”

As a summary observation related to Research Question 3, perhaps it might have been more applicably phrased as “Are there (or alternatively, “What are the . . .”) dimensions of organizational behavior associated with financial decision-making that

distinguish the colleges from one another, just as those institutions are differentiated in terms of persistence and graduation rates?” Questioning “the extent to which” any differences found between the colleges in terms of the organizational-behavior dimensions of financial decision making are associated with rates of persistence and graduation is tenuous for at least a pair of reasons.

As a notable reason, the wording of Question 3 could be perceived to suggest that this study was premised, if only in part, on the proposition that a link of some sort, whether direct or indirect, existed between the nature of financial decision making and student outcomes. That was not the case. Rather, this study was designed to explore whether institutions that were similar in key respects, but differed in terms of student persistence and graduation rates, could also be distinguished in terms of dimensions of organizational behavior associated with the allocation of financial resources. The results of this study provided evidence for the possibility that otherwise similar institutions can be distinguished on that basis.

Secondly, a phrase such as “the extent to which” implies the capacity to assess levels or degrees of some observed phenomenon. Q Methodology and factor analysis, however, are not amenable to such a task. Those tools were appropriate for the exploratory nature of this study. Those provided effective means for distilling meaningful themes about the manner of allocating financial resources from the diverse perceptions of institutional leaders who participated in this study. Those themes, however, cannot be ordinally ranked but only viewed as qualitatively different. In this case, Metropolis College and Promontory College exhibited respectively distinct dimensions of organizational behavior associated with the allocation of financial

resources, and the characterization of financial decision making at Oakleaf College incorporated elements of organizational-behavior profiles of the other two college. No basis exists, however, for portraying one profile as greater or stronger than any other.

Germane to this research question, and important to the purpose of this study, overall, the results of this study showed that the manner with which financial decision making occurred at the respective institutions could be characterized in terms of dimensions of organizational behavior. In the specific cases of Metropolis and Promontory Colleges, those characterizations were uniquely distinct. This study did not determine, nor was it designed to determine, whether the manner with which institutional leaders allocate financial resources influences student outcomes. Nonetheless, notable anecdotal evidence, cited above, in the form of new academic offerings and programs and practices designed to enhance the student experience that emerged from each institution's unique approach to the allocation of financial resources suggests that student outcomes were affected by the manner with which financial decision-making occurred. In addition, the finding that institutions that appear structurally similar, but differ in terms of student persistence and graduation rates, can also be differentiated on the basis of organizational-behavior dimensions of financial decision making points to a possible relationship between dimensions of organizational behavior in financial decision making and student outcomes, and encourages further research on the matter.

Conclusions

Chin (2012), as cited in the outline of the contextual framework for the present study, observed that scholarship related to the effects of the institution on student

persistence and graduation rates typically centered on either structural attributes of the institution, such as size, nature of control or selectivity, or on financial matters, typically in the form of the correlation between certain types of spending and student outcomes. He recommended that researchers broaden the range of institutional characteristics that they study. He suggested, in particular, that organizational behavior within colleges and universities, and its influence on student outcomes, constituted a neglected, yet potentially rich, realm for study.

Ro, Terenzini and Yin (2013) echoed the perspective of Chin, proposing that what they described as the “internal organizational context” of colleges and universities, exemplified by the culture, policies, and programs of the institution, wielded more influence on learning and student experiences than structural characteristics of institutions. They further posited that, despite the substantive influence of institutional characteristics on student outcomes and experience, that influence was of an indirect nature.

The “building blocks” of the conceptualizations of Chin (2012) and Ro, Terenzini and Yin (2013) were the works of early scholars that led to the widely adopted interactionist model of Tinto (1975, 1993). That model was refined and expanded by the contributions of others (e.g., Bean, 1980; Berger, 2000; Berger & Milem, 2000; Braxton & Brier, 1989; Pascarella, 1985; and Terenzini & Reason, 2005).

The present study was similarly founded on the conceptualizations of Berger and Milem (2000) and Terenzini and Reason (2005) that emphasized the multi-faceted nature of the organizational component of the college experience. It was also influenced by Ro, Terenzini and Yin (2013), and sought to expand the understanding of “interaction.” The

conventional definition of “interaction,” particularly in early iterations of the interactionist models, was of interactions directly between students and the various facets of their college experience. Ro et al. posited, however, that some interactions between colleges and students may be indirect in nature. They proposed, for example, that some elements of the institution, such as size or selectivity, may be too far removed from the experiences of students to have strong, direct, interactive influence on the outcomes of students, but may have influence, nonetheless, in an indirect way.

In an exploration of the interplay between organizational behavior and the allocation of financial resources, this study found that the manner with which financial resource allocation occurred could be characterized in terms of dimensions of organizational behavior. As noted above, two of the institutions in this study, Metropolis College and Promontory College, were uniquely differentiated from each other on that basis. The juxtaposition of that differentiation with the differentiation of these institutions in terms of levels of student persistence and rates of graduation provokes curiosity about the existence of an interactive dynamic among organizational behavior, financial resource allocation and student outcomes that warrants further examination.

Reason (2009) proposed, “To fully and effectively address student persistence, any intervention must consider the local organizational context and the local student peer environment. Individual student’s decisions about whether to persist are made within, and influenced by, these two proximal contexts” (p. 678). The results of this study add another facet to the understanding of a complex interaction of elements that contributes to the student experience, that being the manner with which financial decision making occurs. Uncovering more about the complexity of the system that influences the student

experience, however, provides emphasis to the profundity of the phrase, “The more we know, the more we don’t know.”

The paradox of acquiring increased clarity on the unknown draws attention back to the initial stimulus for this study: the inconsistent and contradictory results in research attempting to find a correlation between the allocation of financial resources—how much and to what purpose—and student outcomes. The implications of this study regarding the intricacy of the influence of dimensions of organizational behavior on the manner with which financial resources are allocated suggest that the assumption of a direct link, and one that can be discovered, between the allocation of financial resources and student outcomes is illusory in its simplicity. The actual linkage is likely more complex and indirect. An assumption to the contrary would represent a befitting object of the observation of Ro, Terenzini and Yin (2013), cited earlier in Chapter 3: “Current theories or models of college effects on students may well be *underspecified, overlooking* [italics added] both the nature and length of the ‘causal chain’ relating to student learning and development” (p. 277).

The inherent complexity in the interaction between students and the milieu of their college experience encourages further study of both the nature and the location of the allocation of financial resources in the “‘causal chain’ relating to student learning and development” (Ro et al. 2013, p. 277). Returning to the current study, the need for continuing research is highlighted by the observation that this study did not produce a distinct profile of the dimension(s) of organizational behavior related to the allocation of financial resources for the institution, Oakleaf College, with the highest rates of retention

and graduation. A host of reasons, beyond the scope of this study to discover, may account for the mixed results associated with Oakleaf College, and beckon illumination.

Limitations

Due to the incipient nature of this exploration of the relationship between organizational behavior and the allocation of financial resources, certain limitations and strengths are associated with it.

As one limitation, the current study constituted an exploration of phenomena rather than a quest to empirically validate a theory, model or conceptualization. That end was achieved. This study unfolded increased understanding of the relationship between organizational behavior and the allocation of financial resources, and the results provide a platform for further exploration or the conceptualization of models explaining that influence that could be tested through empirical study.

In addition to the exploratory nature of this study, the current study examined a microcosm of the complex set of elements comprising the nexus of interaction between students and the institutions they attend. As such, the reach of any inferences arising from this study should be commensurately measured. This study entailed a small number of participants. The number of participants in studies employing Q Methodology is not typically considered a matter of concern since that general rationale for Q Methodology is to obtain the perspectives of those who take part in such studies rather than to verify the perspectives of a larger population (Watts & Stenner, 2012). The low number of participants is being acknowledged, however, with the recognition that potential readers of this research may not be acquainted with Q Methodology.

Related to sample size, the study enlisted the involvement of only the senior leadership of the respective institutions. The range of participants was limited to those individuals who comprised the “dominant coalition” (Thompson, 1967) because of their broad-reaching responsibility for, and influence in, the allocation of financial resources and administration of their respective institution (Cameron, 1978). An illuminating sequel to this study would be to engage individuals from a broader spectrum of the organizational hierarchy in a similar Q Sort to assess the consistency of perspectives throughout the institution.

The institutions included in this study were selected from a defined pool of potential participant institutions on the basis of key institutional characteristics. One of those was enrollment, with overall enrollment limited to the range 500 to 1,500. As stated in Chapter 3, that limited range was established to avoid the structural differentiation that might occur, and consequently bias this study, as institutional size exceeded 1,500. Also as noted above, inclusion of institutions with enrollments of less than 500 students raised the concern that the unique challenges experience by colleges of that size might introduce bias of a different sort into the study. The emphasis provided to the Q Sort item, “Crisis-driven,” at Promontory College and impending closure of that institution encourage wondering of whether the size of the enrollment filter in identifying institutions for participation in this study was too small. An alternative perspective, however, suggests that financial exigency and sometimes closures are, regrettably, realities within the landscape of higher education. As a result, inclusion of troubled institutions results in a representative portrayal of sectors of higher education.

Directions for Future Research

The experience of conducting this study highlighted the value of Q Methodology as an informative and efficient investigative tool, and one that could be valuably employed in future research. Fascination was found in the manner with which participants embraced the unobtrusive, but provocative and evocative, nature of the Q Sort exercise. “That was fun!” was not an uncommon response from individuals at the conclusion of the activity. Many also readily envisioned meaningful opportunities for learning and exchange of ideas through the application of Q Methodology.

This study emphasized both the importance and the possibility of studying the *underspecified* and *overlooked*, using the terminology of Ro, Terenzini and Yin (2013), elements of higher education. As observed, above, better understanding of the nature and influence of organizational behavior emerges as an immediate candidate for further study. In addition, broad benefit could be derived from the identification and exploration of other overlooked facets of higher education.

This study drew attention to the importance of recognizing the multi-dimensionality and interrelatedness of elements inherent in higher education. The interrelatedness of organizational behavior, financial administration and student outcomes from this study serves as an obvious example. Other interrelationships exist and are readily identifiable in higher education. This study portends of the richness of understanding that can be derived from future research based on systems of integrated activity rather than isolated elements for microscopic study.

This study also raised questions that warrant exploration about the ability of colleges and universities to institute or control changes to institutional dimensions of

organizational behavior (McCann 2014). Pertinent areas of future study should include the capacity of institutions to learn or adapt to evolving environments or to changes within the organization. Valuable insights could also be derived from examinations of the nature of and stimuli for changes in organizational behavior over time.

As offered above, this study prompted curiosity about the universality of perceptions of dimensions of organizational behavior across breadth of the organizational structure. Examining the perceptions of individuals at multiple levels of the institution or in different divisions of the college on topics such as the organizational dimensions of the allocation of resources, could identify the manner with which common perspectives exist, and the institutional implications if those do not. Related to the phrase, “Perception is reality,” such study could identify the alignment between, for example, the perception of senior leadership and the reality of those responsible for implementing initiatives determined by the leadership.

The unique and differently-influential character of the presidents at the three college in this study, stimulated an interest in, and suggested as topic for study, the role of the president, particularly at small institutions, in establishing the tone, values, and modes of operation. In the interviews, for example, comments emerged that revealed points of view among senior leadership on substantive matters that differed with those of the president or, more positively, identified the president as the predominant factor in significant institutional successes.

Further understanding of the role of organizational behavior in student outcomes might also be derived by thinking more critically about not only those qualities that differentiate institutions but those that institutions share in common, as well. As

example, the methodology employed in this study was oriented to identifying differences among the colleges in the study. Less attention was provided to commonalities among the colleges in this study in terms of dimensions of organizational behavior.

Consequently, perusal of similarities among the colleges in this study, as presented in Table 20, proved enlightening.

Table 20 groups the 41 Q Sort items in terms of the number of item with values of -4, -3, +3 and +4 which imply strong agreement or disagreement that those words or phrases are representative of financial resource allocation at the participant's institution. The items are ranked within each group by the absolute value of the mean values across institutions for each item. The table implies that the three institutions were undifferentiated in terms of their high degree of agreement that the seven items in the top grouping were representative of financial decision making at each institution. The lack of any 3's or 4's associated with the 19 items in the bottom category suggests that the three institutions shared general ambivalence about those items. Since pronounced differentiation could not occur on the basis of those 26 items in the top and bottom groups, the 15 remaining items in the middle two groups—little more than one-third of the total 41 items—served substantially as the basis for determining any unique characterizations of the three colleges.

Table 20. Q Sort Items Ordered by Frequency of Item Values of Either -4, -3, +3, +4 and Mean Item Value

No.	Statement	Q Sort Value*			
		Oak.	Metro.	Prom.	Mean
Frequency of 3 (N = 7)					
22	Mission-driven	4	4	4	4.00
15	Hostile	-4	-4	-4	-4.00
1	Acrimonious	-4	-3	-4	-3.67
21	Misguided	-3	-4	-4	-3.67
10	Ethical	3	3	4	3.33
13	Goal-driven	4	3	3	3.33
29	Priority based	3	3	3	3.00
Frequency of 2 (N = 6)					
17	Impact-oriented	3	4	2	3.00
35	Self-serving	-4	-2	-3	-3.00
9	Entrepreneurial	4	4	0	2.67
24	Neglected	-3	-2	-3	-2.67
32	Resistant to change	-1	-3	-3	-2.33
6	Crisis-driven	-2	-3	3	-0.67
Frequency of 1 (N = 9)					
7	Data-informed	2	2	4	2.67
5	Complacent	-2	-3	-2	-2.33
12	Futile	-3	-2	-2	-2.33
34	Risk-averse	-1	-4	-1	-2.00
38	Territorial	-2	-1	-3	-2.00
33	Resource-driven	3	1	1	1.67
27	Political	-3	0	-2	-1.67
16	Imaginative	0	3	0	1.00
40	Transparent	0	0	3	1.00

No.	Statement	Q Sort Value*			
		Oak.	Metro.	Prom.	Mean
Frequency of 0 (N = 19)					
4	Collaborative	2	2	2	2.00
3	Bureaucratic	-2	-2	-2	-2.00
41	Trusted	2	1	2	1.67
19	Insular	-2	-2	-1	-1.67
28	Principle-based	2	1	1	1.33
30	Rational	1	1	2	1.33
37	Successful	1	2	1	1.33
14	Hierarchical	-1	-1	-2	-1.33
26	Participatory	2	0	1	1.00
39	Timely	1	2	0	1.00
2	Ambiguous	-1	-1	-1	-1.00
8	Dominated by a few	-1	-1	-1	-1.00
18	Inclusive	0	0	2	0.67
20	Long-term perspective	1	1	0	0.67
23	Necessary	1	0	1	0.67
25	Outward-looking	0	2	0	0.67
No.	Statement	Q Sort Value*			
		Oak.	Metro.	Prom.	Mean
31	Reactive	0	-1	-1	-0.67
11	Formalized	0	0	0	0.00
36	Structured	0	0	0	0.00

**The Q Sort Values shown here are factor estimates for each institution as determined by factor analysis.*

The foregoing presents an oversimplification of the mathematical intertwining of correlations, rotations and weightings of factor analysis, but it does prompt question about the sufficiency of essentially relying on 15 items to identify multiple differentiating factors. From an alternative perspective, this observation raises the possibility that perhaps colleges and universities within particular classes of institutions are not as different as individuals might envision. That highlights the prospect that, with the

appropriate tools, methodologies or insights, the task of identifying the qualities of successful institutions that could be emulated by those aspiring to greater success may not be as wide-ranging as might be assumed.

APPENDIX

WORDS AND PHRASES COMPRISING Q SORT CONCOURSE

Acrimonious	Mission-driven
Ambiguous	Necessary
Bureaucratic	Neglected
Collaborative	Outward-looking
Complacent	Participatory
Crisis-driven	Political
Data-informed	Principle-based
Dominated by a few	Priority based
Entrepreneurial	Rational
Ethical	Reactive
Formalized	Resistant to change
Futile	Resource-driven
Goal-driven	Risk-averse
Hierarchical	Self-serving
Hostile	Structured
Imaginative	Successful
Impact-oriented	Territorial
Inclusive	Timely
Insular	Transparent
Long-term perspective	Trusted
Misguided	

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