

INSTITUTIONAL PORTFOLIO MANAGEMENT:

A MODEL OF INTEGRATED PLANNING

by

Anne Klees Zulick Milkovich

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DEDICATION

I dedicate this work to two beloved comrades who were called from this world before my goal was reached: Betsy Palmer and Dewitt Latimer. Although I only knew Betsy for a few short months, her spirit was indefinably gentle and challenging, energetic and calm, insightful and inspiring. Dewitt crashed into my life in May of 2012 and crashed out just as suddenly a year later. In the blessed and tumultuous time that we worked together, he became a mentor, teacher, protector, supporter, and friend. He saw something in me that I did not see. His belief in me has given me the confidence and courage to stand my ground in the face of personal challenge and to follow my own path. In my heart I communicate with him regularly and know that he is proud.

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ABSTRACT

The pilot study and manuscripts presented in this dissertation introduce institutional portfolio management as a model of integrated planning to address institutional performance improvement. Higher education is under pressure to demonstrate and improve institutional performance in terms of access, cost, and throughput. Few models exist to guide leaders in implementing transformative change that will address the problem. Program prioritization is a means to do so yet it is usually implemented as a one-time solution and not without controversy. A parallel model of portfolio management is used in private industry as an ongoing and rational practice of organizational strategy. The parallels of the two disciplines have not previously been noted in extant literature.

Through my collected body of doctoral work, I provide empirical data on the processes and outcomes of program prioritization. I establish structural contingency theory as a central paradigm explaining the cycle of mission fragmentation and program prioritization in higher education. I evaluate the practices of program prioritization and illustrate the parallel with its industry cousin portfolio management. I introduce institutional portfolio management as a model of integrated planning based on the best practices of both disciplines.

A pilot study published as a conference proceeding finds common themes from interviews of institutional leaders who have undertaken program prioritization. The themes revealed a relationship between strategic approach and successful outcomes. They also provided support for the practice of inclusivity and transparency in the process as important keys to successful outcomes. The first article searches for correlation between institutional characteristics and the tendency toward program prioritization. The study finds that large doctoral and land-grant institutions are more inclined toward program prioritization than those with more focused missions, such as private liberal arts institutions. The second article establishes structural contingency theory as a central paradigm that explains the cycle of mission fragmentation and program prioritization, inductively reasoned from the history of higher education. It also explains why the needed transformational change is hindered by administrative success and how a model of integrated planning can overcome that impediment. The third article elaborates the practical elements of the framework so that practitioners can deploy it.

CHAPTER ONE

INTRODUCTION

“I thank my fortune for it,
My ventures are not in one bottom trusted,
Nor to one place; nor is my whole estate
Upon the fortune of this present year...”
(William Shakespeare, Merchant of Venice,
Act I, Scene I, spoken by Antonio)

The Merchant of Venice was grateful that he had diversified his holdings across more than one ship’s bottom, more than one location, and more than one year’s investment return. Shakespeare, through the character of Antonio, provided an early example of applied economic portfolio theory: the intentional and collective management of a portfolio of investments to maximize return and minimize risk in alignment with strategic objectives (Rad & Levin, 2006). Economic portfolio theory posits that when investments or assets are collectively managed and balanced, the return can be maximized while the risk can be minimized to better weather the storms of economic uncertainty (Markowitz, 1990) such as the maritime storms the Merchant’s goods faced at sea. This practice of collective and intentional management of investments is known today as *portfolio management*, which can be applied to organizational investments and assets as well as financial investments (Donaldson, 2000; Kumar, Haya, & Niu, 2008).

This dissertation presents the application of portfolio management as a potential means to improve the institutional performance of resource investments in academic and administrative programs, through a pilot study and three publishable-quality, peer-reviewed manuscripts. The first manuscript was published by the journal *Planning for*

Higher Education in its Winter 2015 issue. The second manuscript has been accepted for publication by the journal *Planning for Higher Education* in the Winter issue with expected release in March, 2016. The third manuscript has been submitted to the peer-reviewed journal *EDUCAUSE Review* and is under review.

Why is it important to explore methods to improve institutional performance? Higher education is an investment by society and by individuals with an expected return in public good and private benefit (Duderstadt & Womack, 2003; Kezar, 2004; United States Department of Education, 2006).

Over the last decades, the expectation of higher education as a public good has shifted toward a greater emphasis on individual benefits, from an investment in institutions as generators of national knowledge and advancement toward an investment as an industry benefiting the students who attend (Gumport, 2005; Kezar, 2004). Evidence of this shift can be seen in the changing price of higher education, which has shifted to be borne by the students who attend. From 1960 to 2008, the portion of family income required to pay for a student's education, for the lowest quintile of income, has gone from 13% to 27% (Immerwahr, Johnson, & Gasbarra, 2008). From 1996 to 2006, public university tuition increased at an average compounded annual rate of 5.98% compared to a 2.44% increase in the Consumer Price Index over the same time period, even though instructional expenditures remained largely steady (McPherson & Shulenburg, 2010). Wellman explains the trend by illustrating that enrollments have been increasing faster than public support, resulting in lower funding per student, or a shift in burden of the cost from the public to the students who attend. The decline in per-student funding is compounded by the fact that the increased number of students is

coming from predominantly low-income families and first-generation students (Wellman, 2006).

Regardless of where the return on investment accrues—to society or the individual—the expectation of better return has been steadily increasing. Both governments and the general public are scrutinizing the higher education sector with greater concern and demands for a better return (Archibald & Feldman, 2008a; Immerwahr et al., 2008; National Center for Public Policy and Higher Education, 2008; Powell, Gilleland, & Pearson, 2012; Richardson, 2009; Wellman, 2006). In today's era of increased funding pressure, public scrutiny, and performance expectations, institutions of higher education face new challenges that compel them to undertake new practices toward improved institutional performance.

As the literature review will elaborate, institutional performance itself is not clearly defined, much less how to measure or improve it. For an institution today, demonstrating institutional performance, and improvement thereof, can include a range of activity from communicating anecdotes of institutional and academic achievements to stakeholders and the general public, to publishing assessment and accreditation information, to reporting any number of selected performance metrics to system offices or state governments. Those metrics typically include 4- or 6-year graduation rates, budget information, number and type of degrees awarded, and any other quantitative data points that serve to justify the institution's value.

At the same time that institutions of higher education are facing increased pressure to improve the return on the investment, they are also facing increased turbulence and economic uncertainty at the sector level, or industry level in private-sector

terms. Michael Porter (1980) defined five forces that shape industries, still known today as “Porter’s Five Forces,” as being supplier power, threat of substitutes, threat of new entrants, buyer power, and competitive rivalry. Patricia Gumpert illustrates that while higher education has faced changing industry forces in the past, the current climate is the first time that all five of the industry forces are changing simultaneously (Gumpert, 2007). The changes in industry forces manifest for higher education as: a) society shifting toward a view of higher education as an individual benefit rather than a social good, believing the expense should be borne by the individual and not the state; b) state budgets in fiscal crisis in conjunction with the economic downturn; c) legislatures less inclined to fund higher education as a result of social pressures and less able to fund higher education as a result of fiscal pressures, d) for-profit institutions increasing in number and competitiveness, e) enrollments rising, adding increased pressure on institutional infrastructure; f) the student demographic shifting away from the traditional post high-school four-year experience to a profile of older working adults or more transient students who stop and start or come and go among schools; g) distance education breaking down geographic boundaries and expanding the competitor base from which students can select an institution (Birnbaum, 1988; Duderstadt & Womack, 2003; Eckel, 2002). While the Merchant faced high risk on high seas, he did not have an entire nation demanding improvement in his investment portfolio at the same time.

Private-sector organizations adapt to changing market forces by restructuring their portfolio of resource investments to align with new objectives (Donaldson, 2000) similarly to the rebalancing of a financial portfolio in response to changing risk/return objectives (Kumar et al., 2008). Through a process of evaluation and prioritization, a

mission-critical program may be augmented with additional resources while a lower priority program may see its resources reduced or eliminated. This practice has evolved into a formal discipline and published standard known as *portfolio management*.

Portfolio management in the private sector has a close cousin in the higher-education sector, known as *program prioritization*¹. Program prioritization treats academic and administrative programs and services as a collection of investments that should be intentionally and collectively allocated and optimized to achieve strategic balance. As in private-sector organizations, in institutions of higher education, the practice of program prioritization likewise comprehensively evaluates and prioritizes all academic and administrative programs in an effort to optimize investment of institutional resources, e.g. funding, physical assets, and human time and effort, to meet strategic objectives (Dickeson, 1999, 2010).

History

Program prioritization has an equally long history in higher education although its evidence must be interpreted just as portfolio management must be inductively reasoned from the Merchant's words. Thelin's compiled history of higher education (Thelin, 2011) illustrates that national trends and events at the sector level have fostered recurring cycles of expansion in higher education followed by attempts at corrective contraction. As institutions expanded their offerings, they broadened their portfolio of programs and services, yet often without increased resources to invest. For example, in the later 1800's,

¹ The term *program prioritization* came into use at the turn of the 21st century when Robert C. Dickeson popularized program prioritization as a solution to the continually contracting constraints on the higher education sector (Dickeson, 1999, 2010).

institutions responded to the emerging industrial economy by adding professional programs to attract new students, without additional funding except the hoped-for increase in students, and without reducing their existing portfolio of traditional programs. This resulted in *mission fragmentation*², where limited resources were thinly spread among a disparate array of unaligned goals. Mission fragmentation was then followed by varying degrees of program prioritization, where institutions attempted to realign and refocus their resources to achieve a more articulated mission. Empirical evidence supporting the theory of mission fragmentation is found in the second study of this dissertation, presented in Chapter Four, that demonstrates a relationship between institutional characteristics and the initiation of program prioritization. Large doctoral institutions and land-grant institutions, i.e. those that have broad missions and program portfolios, were found to be significantly more likely to undertake program prioritization than institutions whose characteristics implied they had a more focused mission, such as a private liberal arts institution.

Examples of the cycle of mission fragmentation and program prioritization are illustrated in the following events and eras. In each era, I will illustrate that funding sources are a theme of change across the sector of higher education (as opposed to the private sector or public sector) that drives institutional responses.

² The term *mission fragmentation* has not been defined in prior literature; I use it here to refer to the tendency of institutions to distribute resources among many competing demands that are not prioritized or aligned with mission objectives.

Yale Report of 1828

In the late 1700s and early 1800s, higher education institutions were small and focused on programs in the classics intended to prepare young men for roles in the clergy or civic leadership. New disciplines in science, geometry, law, medicine and general preparation for the practical professions began to emerge with increased national interest in having an educated citizenry (Goodchild, 2007). Institutions responded by expanding their curricula to meet these interests without a concomitant increase in funding or resources (Thelin, 2011). This led to the Yale Report of 1828, where the authors defended a higher education mission focused on the traditional curriculum of classical study but also called upon their fellow institutions to continually reexamine their purpose and adapt their programs to the needs of the age including the possibility of “breaking up its older system” (Mattingly, 2007, p. 245) or in other words, redistributing resources from the older curriculum to the newer. This is the essence of program prioritization.

Civil War Era

The national context of the Civil War era was characterized by nascent industry that was becoming an attractive alternative to higher education. Colleges added professional schools and redefined themselves as universities with broader focus, attempting to support a broader range of disciplines and competing to attract more students. Yet other institutions responded with a form of program prioritization directed at competitive advantage when in 1890 Harvard, Princeton, and Yale asserted individual missions to differentiate from each other in competition for students (Thelin, 2011). For example, Northeastern University promoted its work-study program to urban high-school

graduates and avoided competing for the prep-school prospect pool, while Boston College sent its faculty to doctoral programs at Harvard rather than expand into those advanced degree programs. By delimiting their program expansions to avoid encroaching on each other's offerings, they effectively prioritized their resources to align with their own individual missions.

Scientific Management Movement

In the industrial era of the early 1900's, the hierarchical structure of industrial organizations along with the concept of scientific management began to influence higher education. Educationally oriented foundations also emerged during this era, namely the Rockefeller Foundation General Education Board in 1903 and the Carnegie Foundation for the Advancement of Teaching (CFAT) in 1905. The foundation of the Association for American Universities formed in 1900 defined "great" universities, creating the early beginnings of rankings and competition for prestige. Institutions competed for recognition as a destination campus through investments in administrative programs, athletics, gothic architecture, landscaping, and more. Going against the tide of investment in administrative program proliferation, Princeton demonstrated program prioritization by intentionally avoiding growth. Instead they maintained their focus, and therefore the alignment of their resources, on the college experience as their differentiated mission (Thelin, 2011).

World War Years

The cycle of mission fragmentation and program prioritization gained speed during the World War years of 1920-1945. Sector-level changes began with the nation's

call for wartime scientific research, primarily from higher education institutions.

Foundations introduced soft money and generous per capita funding amply covered the base costs of running an institution and rewarded large class sizes and enrollments. In response, institutions invested resources to expand student enrollments and attract PhDs. This resulted in the establishment of postdocs, a proliferation of doctoral programs, and an increased span of program offerings, with advanced courses, libraries and labs, and administrative offices (Geiger, 2007). And yet, there was still a rebound toward program prioritization from the increasingly influential foundations as well as select institutions.

The Carnegie Foundation for the Advancement of Teaching and the Rockefeller Foundation issued a call for non-duplication of programs throughout the higher education system to improve efficiency and advocated a corporate model of management “toward the common goal of rationalizing colleges and universities into effective systems” (Thelin, 2011, p. 238). Other institutions respond with the Steeples of Excellence initiatives in the 1950s that augmented prestigious academic programs with additional resources at the expense of other fields.

Era of Public Contraction

In the latter part of the 20th century, the rapid expansion of the Golden Age met the realities of contracting public resources. In 1971 the Hodgkinson Study found higher education in general to have moved into an “omnibus model” to be all things to all people (Hodgkinson, 1971), echoing the words of Ezra Cornell almost a century earlier who would build an institution where “any body can study any thing” (Thelin, 2011, p. 301). Former widespread mission fragmentation now faced declining support across the nation.

The practice of program prioritization, although clearly evident in prior eras, for the first time was formally articulated as a solution for institutions facing fiscal crisis. A contemporary expert, former college president and co-founder of the Lumina Foundation focused on higher education improvements, Robert C. Dickeson advocated the practice of institution-wide program prioritization which gained a small following of institutions driven either by crisis or an interest in gaining a competitive advantage (Dickeson, 2010).

Driven to maximize their mission and prestige they have repeatedly battled funding limitations as an obstacle to achieving their goals, with trends in funding sources becoming a significant driver of institutional change. Of the major sources of funding for higher education—federal appropriations and research grants, state appropriations, student tuition, fund-raising and gifts, endowments, and auxiliaries (Duderstadt & Womack, 2003; Serna, 2013)—trends for two in particular have significant impact on program prioritization: state appropriations and student tuition. Generous public funding drove mission fragmentation through increases in undergraduate programs and campus amenities. New grant funding sources drove mission fragmentation through increases in doctoral programs and administrative support systems. Reductions in public funding during eras of contraction triggered fiscal crises that resulted in a loose form of program prioritization to realign and refocus decreasing resources.

Realigning the resource investments in programs and services, defined as program prioritization, likewise is an exercise in portfolio management. These two practices, portfolio management and program prioritization, have evolved in parallel channels without prior cross-reference yet both apply the same economic portfolio theory to improve investment results. By whatever name, the practice in higher education may be

entering a new era of interest as a means of demonstrating institutional performance in response to increased public pressures. If portfolio management saved the fortune of the Merchant of Venice can it save the future of higher education?

Statement of the Problem

Program prioritization may be effective in responding to fiscal crises, demonstrating better institutional performance, or justifying changed resource allocation to better align with mission objectives. Eliminating or reducing academic programs for any reason is a controversial undertaking (Dickeson, 1999, 2010) of second-order change that is disruptive to institutional cultures and hard to achieve (Kezar, 2014). While portfolio management in the private sector is a rational and ongoing process to utilize valuable resources to best effect, program prioritization in the higher-education sector has been viewed as an attack on academic quality and freedom and has often been applied as a one-time drastic solution rather than the ongoing process it was meant to be (Milkovich, 2013). The problem is compounded by a higher education environment where scholars do not have a definitive agreement on ways of defining or measuring institutional performance, much less how to improve it, although metrics have been proposed and studied. The problem therefore is twofold: we have deficiencies in the definition of institutional performance and how to measure it and we have deficiencies in the application of program prioritization as a hypothetical means to improve institutional performance. In the following sections I describe the current understanding of institutional performance and measurement supported by recent studies in the field.

Defining Institutional Performance

Although work has been done in the study and understanding of institutional performance, we do not yet have a clear and commonly agreed upon definition and must accept proxies, or approximate definitions, to make any progress. The field is narrowing to a few commonly discussed aspects of institutional performance, referred to as the iron triangle of cost, quality, and access. According to a study of higher education leaders conducted in 2008, cost, quality and access are interrelated such that a change in one must create a reciprocal change in the other (Immerwahr et al., 2008). For example, to decrease cost one must decrease quality or decrease access to disadvantaged students who require more services to succeed; to increase quality one must increase cost to achieve it and so on. In private sector portfolio management (encompassing project management), there is a similar paradigm known as the triple constraint of budget (cost of the investment), scope (quality, the specific criteria that will be met), and time (access, or throughput of graduates) (Project Management Institute, 2008; Rad & Levin, 2006; Reginato, 2005). Like the iron triangle, a change in one must create a reciprocal change in another. To decrease the budget (cost) of a project one must decrease the scope (quality) or decrease the schedule (access, or throughput of graduates). To increase the scope (quality) one must increase the budget (cost) to achieve it, and so on.

Powell, Gilleland & Pearson narrowed the definition of institutional performance from the trinomial metaphors of the iron triangle and triple constraint to a binomial discussion of efficiency and effectiveness. The authors link efficiency to cost, in that more efficient institutions can offer lower price of education to students, and link effectiveness to quality, in that more effective institutions better meet the educational

goals of stakeholders such as society, students, and parents (Powell et al., 2012). Both are illustrated as difficult to measure, especially measurements of quality and outcomes, i.e. the long-term positive impacts of education on society, such as improved health or reduced welfare (Barnetson & Cutright, 2000).

Deficiencies in Institutional Performance Measurement

While some work has been done to define institutional performance and reasonable proxies to demonstrate it, developing quantitative metrics, or measurement units, has still proven elusive. In 2012, the National Research Council published a report on the measurement of productivity in higher education, noting the difficulty and complexity of establishing common metrics for measuring institutional performance. They discuss the difference in measuring inputs, such as student quality or institutional expenditures, versus measuring outputs, such as graduation rates. While inputs are valuable to measure, they do not tell us of the effectiveness of those inputs in achieving desired outcomes nor the efficiency in utilizing them. The benefits of higher education are also nonmarket in nature, such as the benefit to society of an educated citizenry, making it difficult to establish a clear and measurable value that a market price can support. The Council acknowledges that the quantitative measurement of either outputs or inputs does not take into account the variability or importance of quality. Finally, they note the added complication of variability by institutional mission and characteristics that calls into question the validity of a standardized set of performance measures (National Research Council, 2012). This summary of the measurement of institutional productivity

describes the challenges and limitations of using any metrics of institutional performance, yet also challenges researchers to use what metrics we have, albeit imperfect.

The work of Michael Middaugh (2010) also supports the difficulty of measuring institutional performance. In studies of institutional expenditures Middaugh found that the variability of expenditures across institutions was best explained by the differences in institutional mission. Different missions, such as high research activity versus primarily instructional activity, drive different curricula. In turn, different curricula require different levels of investment to support. Research laboratories and teaching hospitals are far more expensive to maintain than undergraduate libraries, for example. Those differences must be taken into account when measuring institutional performance.

As noted by the National Research Council, quality is the most difficult aspect of performance to measure. Rachelle Brooks in 2005 conducted a study of the use of metrics to measure quality and noted many deficiencies. Either quality was not explicitly defined or it was operationalized with metrics that were available but not necessarily good measures. For example, Brooks illustrated that the measurement of research productivity often uses federal grant awards as a readily-available metric but this does not take into account research conducted in the social sciences or humanities, nor does it assess the quality of the research produced (Brooks, 2005). In any study of institutional performance, researchers must recognize and address the selection and limitations of available performance metrics.

Similarly, a study conducted in 2002 by Burke, Minassians, and Yang provides a basis for defining and selecting measures of institutional performance but illustrates that there is little commonality among the use of performance indicators. The purpose of the

study was to determine if performance metrics were aligned with proclaimed policy issues at the state level regarding higher education. The authors categorized metrics as inputs, process, outputs, and outcomes. Input indicators refer to the resources received, such as funding. Process indicators refer to the means used to deliver programs and services, such as the use of technology³ in the classroom. Output indicators refer to the quantity of production, such as the number of degrees awarded. Outcome indicators refer to the quality and benefit of programs and services, such as student satisfaction surveys. Graduation rates were the most commonly used metric, found in 24 state performance reports (Burke, Minassians, & Yang, 2002).

Building on those studies, Powell et al (2012) indicated as possible metrics student credit hours, time to degree, degrees awarded, job placement, student retention, and graduation rates. They grounded these selections in the works of Middaugh (1996), Burke, Minassians, & Yang (2002), Hamrick, Schuh, & Shelley (2004), and McPherson & Shulenburger (2006). Other studies using these metrics include Fung (2010) and Scott et al (M. Scott, Bailey, & Kienzl, 2006), who used graduation rates to measure institutional performance, and Shin (2010), who used graduation rates and research funding expenditures as measures of institutional performance.

While the jury is still out on measures of institutional performance with no definitive measures yet agreed upon, the field is narrowing to metrics that are both meaningful and measurable. Throughput, or access, can be demonstrated by graduation

³ Throughout this dissertation, technology refers to information hardware and software, which may or may not be a capital investment and may or may not be innovative.

rates; quality, or scope, can be measured by retention; and cost, or affordability⁴, can be measured by expenditures. Or, in the binomial model of efficiency and effectiveness, efficiency can be measured by cost or expenditures and effectiveness can be measured by graduation rates or retention. So while imperfect, we have metrics available to measure institutional performance in reasonably acceptable ways.

Deficiencies in Program Prioritization Research

Little research has been conducted explicitly on the practice or efficacy of program prioritization as a solution to institutional performance improvement. Scholars have studied numerous theories of organizational change within institutions of higher education (de Zilwa, 2007; Kezar, 2014; Kumar et al., 2008) that provide general guidance to practitioners of program prioritization but effective practices must be extrapolated from empirical studies of those more generalized theories. What studies exist on program prioritization itself are limited and few in number.

The study of program prioritization as a practice dates back to the 1970s and begins to take shape in the 1990s in both empirical and theoretical literature. Shirley and Volkwein (1978) proposed theoretical criteria and a process for setting priorities among academic programs. In an early empirical study, Cope and Delaney (1991) illustrated the use of market-oriented variables used by universities to comprehensively review programs. They provided a case study of a large Midwestern university that used a

⁴ Affordability refers to the price students must pay to obtain a college education. Cost does not exactly equate to affordability, as costs are subsidized by public or private support and not purely passed on to students. Generally speaking, however, changes in cost have a direct or indirect influence on affordability, confounded by changes in public or private support.

market perspective to strategically align program selection of both academic and non-academic programs. Gumpert (1993) illustrated a growing trend of external constituencies influencing decision making in program reduction and the shift of program selectivity from a perspective of public good to industrial and professional demands (2000), which presumes a degree of prioritization in alignment with external expectations, i.e. the market perspective that Cope and Delaney described. El-Khawas (1994) surveyed and described restructuring initiatives conducted by institutions of higher education in response to financial crisis, which involved some level of prioritization in selective decision making. Barak and Sweeney (1995) studied the integration of program review with institutional planning and budgeting, empirically supporting that incorporating program review improved the planning and budgeting process. They also noted that public four-year institutions were more likely to incorporate program review than private two-year institutions, providing a basis supporting differences in practice according to institutional characteristics. Eckel (2002) studied the use of decision-making rules when programs were evaluated for potential closure, shedding some light on how institutions were applying the practice. Similarly, Deer (2006) provided a case study of a shared-governance approach to program prioritization, providing some depth into the efficacy of a particular approach. While these studies provide peer-reviewed research into program prioritization, they are all focused on narrow aspects of the practice, such as external influences, integration with planning, and styles of decision making. They provide support for the *why* and the *how* of program prioritization, but do not illustrate a holistic, integrated approach.

Beginning in 1999 and continuing into the early 2000s, popular literature emerges. Robert C. Dickeson (2010) expounded on the extant literature and evangelized the practice of program prioritization as a means to improve institutional performance and respond to national critics and legislatures. Other authors also published popular articles on the subject, applying portfolio management explicitly to academic program prioritization or to other areas of higher education. Vernon Harper (2013) proposed the use of portfolio analysis to strategically manage the academic programs of an institution based on demand, contribution margin, and service to other programs and William Daigneau (2010) advocated portfolio management as a means of prioritizing resource allocation for university facilities maintenance and investment. The literature provides theoretical propositions, empirical cases, and popular study on the subject of program prioritization, yet the authors in this body of knowledge have not yet drawn the connection between program prioritization and portfolio management that could benefit the practice.

Purpose

The purpose of this dissertation is to illustrate the parallels between portfolio management and program prioritization, and in doing so present a refined means to improve institutional performance by drawing on the best of both. Institutions have faced pressures in the past to improve performance in terms of access, affordability, and quality, but have not faced such a complex set of pressures as they do now (Gumport, 2007). From increased public scrutiny, to fiscal crises, and the gaining popularity of performance-based funding, institutions must improve their performance in the public

eye. Program prioritization is a controversial activity within an institution, with high-stake risks for administrators who undertake it, often implemented as a one-time fix with strong internal resistance to a perceived attack on institutional quality. Portfolio management is closely similar in practice, but implemented as an ongoing discipline with internal support for a perceived rational strategy to improve organizational performance. Yet portfolio management has never been applied to institutions of higher education. Combining the best of both disciplines—the academic emphasis and criteria of program prioritization with the ongoing practice and rational acceptance of portfolio management—could address the challenges and limitations in a refined discipline with the potential to improve institutional performance.

In either case of private corporation or higher education institution, while performance improvement is defined and measured differently, both seek improvement in similar ways. For a private industry organization, performance is improved through portfolio management by augmenting resources on new success strategies, eliminating under-performing programs or programs that are no longer in alignment with corporate strategy or mission. Ultimately, improvement in organizational performance is realized by improved shareholder value and profit. For an institution of higher education, performance potentially can be improved by augmenting resources on new or high-demand programs, eliminating under-performing programs or programs that are no longer in alignment with institutional strategy or mission. Ultimately, and by whatever means, improvement in institutional performance is recognized by improved performance metrics such as graduation rates or post-graduate placement.

I examine and present the parallels and the refined framework of *institutional portfolio management* through a pilot study that led to three peer-reviewed and published, or publishable, manuscripts:

1. “Academic Program Prioritization among Institutions of Higher Education,” is a pilot study that was peer-reviewed and accepted by the Association for the Study of Higher Education for presentation at the annual conference, November of 2013. In this study I interviewed 20 institutional leaders, either Provosts or Presidents, who had undertaken a program prioritization initiative. Through structured inquiry, I gathered information about the motives, context, approach, process, and outcomes of the initiatives, analyzed themes, and discovered patterns of relationship between positive outcomes and strategic approach. This pilot study then led me to pursue further research.
2. “Organizational Portfolio Management and Institutions of Higher Education,” published in the journal *Planning for Higher Education*, issue 43(2), Winter 2015. In this article I present a quantitative study of institutions that have undertaken program prioritization to determine any possible relationship with institutional characteristics. The study found a correlation between Carnegie classification and program prioritization, with public comprehensive doctoral and land-grant institutions more likely to undertake the practice than institutions with a more focused mission, such as private liberal arts.
3. “How Success Slows Transformative Change and Integrate Planning Achieves It,” submitted to the journal *Planning for Higher Education* for its Winter

2016 issue, accepted and scheduled to be published in March, 2016. In this manuscript I illustrate the parallels between program prioritization and portfolio management for an institutional planning audience, who are familiar with program prioritization but not with portfolio management. I introduce structural contingency theory as a central paradigm explaining the slow pace of improvement in institutional performance efforts. I anchor institutional portfolio management in the broader context and practice of integrated planning, espoused by the journal's professional organization as a means of improving institutional performance.

4. "Institutional Portfolio Management: Implementing the Framework" submitted to *EDUCAUSE Review* March 21, 2016. In this manuscript I operationalize the institutional portfolio management framework with practical guiding principles and techniques blended from the parallel disciplines. I include an example of a fictitious institution that walks the audience through the recommended process step by step.

Assumptions

This dissertation compiles multiple studies and articles over time; different assumptions apply to different applications. In this section I compile those underlying assumptions, as:

1. Interviewees responded honestly and with reasonably objective reflections. Understandably, as they were responsible for the process and outcomes of their efforts toward program prioritization, their perspectives were probably

biased, but since they understood and valued empirical study, I assumed that they overcame their bias with reasonable objectivity.

2. Data from the Integrated Postsecondary Educational Data Set (IPEDS), although self-reported and subject to interpretation, is reliable enough to analyze and draw conclusions. This is a reasonable assumption as numerous studies of higher education use IPEDS information.
3. Generalities of sector-level issues, be they higher-education sector or private-sector, are relevant and applicable to individual institutions. This is a reasonable assumption as much of the study of higher education is similarly founded.
4. The sectors of higher education and private industry are different, but enough similarities exist to derive value and apply knowledge from one to the other. This is a reasonable assumption as numerous scholars have similarly looked at both sectors and applied knowledge gained from one to the other.

Limitations and Delimitations

As with the assumptions, different limitations and delimitations exist for different studies and manuscripts included in this dissertation.

1. A limitation of the qualitative study, wherein I interviewed institutional leaders, was a sample of convenience, using snowballing technique, and an n of 20. Although results could not be generalized to the population, patterns of correlation were evident. This initial study provided a good starting place to identify areas for further research.

2. A limitation of the descriptive study, where I looked at the relationship of institutional characteristics and the initiation of program prioritization, was again a sample of convenience and an n of 62.
3. A limitation of the theory-building manuscripts, where I proposed and elaborated a new framework of institutional portfolio management, was the obvious fact that the framework was new to the body of knowledge and not already in practice. I accepted this limitation as a natural consequence of theory building.
4. A delimitation of the descriptive study was to use only data and variables available in IPEDS, and only institutions that reported information to IPEDS, thus eliminating institutions from outside the United States.

Significance of this Work

This work is significant in that it presents unique contributions to the body of knowledge:

- This work applies Structural Contingency Theory to higher education. While other authors have cited the theory in reference to higher education, the theory originating in business context has not previously been mapped to extant theory of higher education. This work grounds Structural Contingency Theory in extant higher education theory to demonstrate its efficacy.
- This work demonstrates parallels between private-industry and higher-education context: the iron triangle and the triple constraint

- This work demonstrates parallels between private-industry and higher-education practices: organizational portfolio management and program prioritization.
- This work provides practical and empirical support for a framework that can improve institutional performance.

The primary audience for this dissertation are the institutional leaders and administrators who will potentially undertake an intervention to improve institutional performance, such as program prioritization or the refined framework of institutional portfolio management. They will benefit by acquiring a grounded knowledge in the history, theory, and potential efficacy of such interventions, as well as gain practical knowledge for the possibilities and limitations of such interventions.

Constructs

While theories of organizational change guide the practice and implementation of program prioritization in higher education, within that practice are a range of constructs that are potentially new or that could be differentially interpreted. In this section I define the primary constructs and variables associated with program prioritization and how those constructs can influence the process.

The practice of portfolio management is a discipline (Project Management Institute, 2008), and like other disciplines it has a nomenclature of terms and constructs. In higher education the practice of program prioritization is similarly developing a set of useful and commonly used terms and constructs. Creating a common vocabulary and understanding of the language of program prioritization will prepare constituents and

inform the process. Following are some of the common constructs and study variables of program prioritization with an explanation of how they influence the process.

Three terms I frequently use in this dissertation that bear clarification are discipline, framework, and practice. A *discipline* is a branch or field of knowledge, often studied by academics or put into practice by practitioners. It has agreed-upon constructs that are commonly known by those familiar with the field. A *framework* I loosely define as a defined collection of knowledge, tools, and techniques that practitioners can use as guidance to operationalize the constructs of their field. It offers practical advice and application of abstract knowledge. A *practice* is something that is commonly done and that may or may not be formally defined. It is just something that people tend to do.

Institutional performance itself as a construct is not consistently and commonly defined, with many variables available to operationalize it. In the private-sector discipline of portfolio management, performance operates within a triple constraint of cost, quality, and throughput wherein a change to one has a corresponding effect on another (Project Management Institute, 2008). In higher education, this has been similarly expressed as the “iron triangle” of cost, quality, and access wherein changes to one have a corresponding effect on another (Immerwahr et al., 2008). These related concepts serve to triangulate an operationalization of institutional performance.

Mission, as a construct, refers to the overarching purpose of the institution and its values, goals and scope of intellectual pursuits (Shirley & Volkwein, 1978). Mission alignment, strategic alignment, and centrality of mission all refer to how closely a program operationalizes the mission of the institution. Tierney (2008) includes mission as an essential element in his study of organizational culture and its impact on decision

making. While abstractions such as values and goals are not articulated in data sets, mission as a study variable can be construed from data fields in the Integrated Postsecondary Data System (IPEDS) such as institutional type (public or private and the degrees it confers), affiliation (public, private with religious affiliation or private without religious affiliation), or Carnegie Class (classification based on programs, research, urbanization, and other considerations). As the intended outcome of program prioritization or portfolio management is a closer alignment of resources to mission objectives and institutional purpose (Dickeson, 2010; Eckel, 2002; Gumpert, 1993), mission as a construct is a key input and strong influencer of the process.

Some constructs can only be clearly understood by considering them together along with their interconnectedness. The *iron triangle* described by college presidents reflects the interconnectedness of quality, efficiency, and affordability of education in which any change to one affects another (Immerwahr et al., 2008; Powell et al., 2012; U.S. Department of United States Department of Education, 2006). *Effectiveness*, as a construct, can be thought of as achieving a desired level of quality through investment in selected activities. It is sometimes used synonymously with the construct of *quality*. *Efficiency*, as a construct, can be thought of as a ratio of outputs to inputs, of the benefits achieved for the cost invested, or the return on investment of effort. If the value or cost of effort exceeds the value or return of benefits, the activity that produces the output is inefficient (Bowen, 1980; Cameron, 1978; Powell et al., 2012).

Effectiveness is difficult to operationalize as the output of quality is hard to measure; inputs of resources such as funding are much easier to measure (Cameron, 1978). Everyone knows “quality” when they see it but few people agree on how to define

it. Effectiveness is focused on how well quality goals are achieved regardless of inputs; efficiency is a ratio of outputs to inputs that focuses on how well inputs are used to achieve a goal. Effectiveness and efficiency influence the process of program prioritization because of the strongly held values, differing perceptions, and general lack of agreement on how to define and measure the constructs.

Another construct to understand is *productivity*, which is also related to effectiveness and efficiency. Productivity can be thought of as the volume or quantity of output of a given activity. In higher education there are two distinctly different functions that generate distinctly different outputs, which can be loosely categorized as learning and research with different measures of productivity (Middaugh, 2002; National Research Council, 2012; Shin, 2010). The productivity construct has a strong influence on the program prioritization process, similarly to effectiveness and efficiency. Productivity can be interpreted as a measure of how hard or how well one works, triggering a sense of judgment or questions of inferiority and superiority. Furthermore, quality and productivity can be inferred to have an inverse relationship (Immerwahr et al., 2008; Powell et al., 2012), i.e. if you increase the volume of output (e.g. graduating more students) you must be compromising quality (e.g. creating a diploma mill). Discussions of productivity are therefore sensitive and potentially charged.

A final pair of constructs that should be considered together are those of educational *cost* and *price*. Cost is the level of expenditure by an institution to produce degrees; price is what a student pays to obtain that degree. Cost and price are sometimes used interchangeably but are not synonymous or even directly related. While not synonymous in meaning, both words can correctly refer to the same thing; for example,

the price the institution offers is simultaneously the cost to the student, and much of the literature thus conflates the two terms. The two are not directly related, as costs to the institution are not directly passed on to the student. Numerous studies have shown that while the price of a public education has risen over the last decades, the cost in public educational expenditures has not; price increases at public institutions are a result of the decline in state appropriations (Cunningham, Wellman, Clinedinst, & Merisotis, 2001; McPherson & Shulenburg, 2010; Middaugh, 2005; United States Government Accountability Office, 2007; Wellman, 2010). Variables to operationalize cost and price are comparatively straightforward as reported instructional expenditures available from IPEDS and tuition or college price available from the Delta Cost Project, the Delaware Study or the College Board (Middaugh, Graham, & Shahid, 2003; Wellman, 2010). The general public has heard much rhetoric about the “college cost crisis” or the rising cost of education, generally aimed as a criticism at institutions and their presumed inefficiency. Few people, including faculty and administrators, have investigated the economic analyses and scholastic literature on the subject for themselves. Empirical demonstration that college price increases are not the direct result of institutional mismanagement may come as welcome news to constituents of program prioritization. At the same time, it could also lead participants to believe that energy would be better spent publicizing the facts and lobbying for increased funding.

Chapter Summary

Institutions of higher education are under increasing pressure to demonstrate effective management of resources to improve efficiency and outcomes. A number of

sector-level forces are combining to create a perfect storm demanding transformative change in institutional management. Student demographics are changing, public confidence is waning, expectations for measurable outcomes are increasing, and funding is declining simultaneously (Gumport, 2000, 2007).

The history of higher education illustrates a continual cycle of expansion, leading to mission fragmentation, and contraction, leading to realignment of resources in response. The cycle is driven by changes in the environment which require adaptive response by the institution to maintain high performance. Intentionally managing academic and administrative programs as an investment portfolio of organizational resources could be a means to proactively manage the cycle rather than react when forced to by fiscal crisis or other external pressures.

Portfolio management in the private sector is a discipline that demonstrably can focus an organization's resources into better alignment with its mission and competitive strategy (Daigneau, 2010; Donaldson, 2000; Harper, 2011; Kumar et al., 2008; Project Management Institute, 2008; Rad & Levin, 2006; Reginato, 2005; Stummer & Heidenberger, 2003). Portfolio management is based on the economic portfolio theory developed by Harry Markowitz in the 20th century (Markowitz, 1990) and has been applied to organizational resource portfolios as well (Donaldson, 2000; Miljkovic, 2006) but has not been applied to institutions of higher education. Program prioritization in higher education is a close cousin, likewise a discipline to bring institutional resources into closer alignment with mission and competitive strategy while mitigating the external influences that challenge performance (Dickeson, 1999, 2010).

Giving institutional leaders an understanding of the disciplines and application in higher education, and combining the best of both into a single framework, creates new maps and navigational systems by which to chart their course. From the themes found among leaders who have undertaken program prioritization, to the empirical evidence supporting the theory of mission fragmentation, and the proposed framework with practical application, the work of this dissertation provides leaders with a compass by which to demonstrate and improve institutional performance in the current era of intense pressure and public scrutiny on the investment of their holdings.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Shakespeare illustrated through the reflections of the Merchant of Venice that economic portfolio theory was applied and used long before it was recognized in academic literature. Through inductive reasoning we can extrapolate themes from literature that are not explicitly defined in ways we might recognize today. Similarly, program prioritization and its many associated theories can be extrapolated from literature both past and present. In order to support program prioritization as an influence on institutional performance, we must first have an understanding of what institutional performance is and how it can be measured. The body of knowledge in the study of higher education does not enjoy a commonly shared definition of institutional performance, or ways and means to measure and analyze it. While authors have recognized that limitation, they also recognize that we must work our way toward the ideal understanding using what tools we have rather than wait for an ideal understanding to present itself. Indicators, metrics, and analytical models are emerging as acceptable means to define, measure and analyze institutional performance.

In this chapter, I review the theories found in literature using structural contingency theory as the central paradigm that explains the historical cycle of mission fragmentation and program prioritization and connects the array of theories around the economy and sociology of higher education. The literature is organized in a conceptual

format around the historical cycle as explained by structural contingency theory to support the goals of the review. The first goal of this review is to establish that scholars can reasonably apply structural contingency theory to institutions of higher education. I meet this goal by illustrating that existing, well-established theories of sociology in higher education elaborate the components of structural contingency theory. The second goal of this review is to illustrate the parallels between the disciplines of program prioritization in higher education and portfolio management in private industry. I meet this goal by examining the literature in those fields. A third goal of this review is to summarize the operationalization of institutional performance measurement by reviewing the most commonly used definitions and metrics. Throughout this review I use a method of purposive sampling, selecting literature that is commonly cited in the field, as well as published standards that practitioners follow, and authors who are recognized as thought leaders in the fields of program prioritization, portfolio management, or performance measurement.

Because this review is broad in scope, covering multiple fields of practice, I anticipate that the primary audience for this review has expertise in one of the examined fields, i.e. institutional sociology, program prioritization, and/or performance measurement. The audience is not likely to be familiar with portfolio management from private industry, nor are they likely to have expertise spanning all of the fields within the review. I therefore explain practices in greater detail where I believe the audience may be less well versed.

This sets the stage for the introduction of institutional portfolio management as a framework for integrated planning that builds on the disciplines of program prioritization

in higher education and portfolio management in private industry, as presented in the pilot study and manuscripts that follow the literature review. As a framework for integrated planning, institutional portfolio management places academic programs at the heart of the planning process, incorporating all other institutional plans into the process—from the strategic plan through enrollment, workforce, development, financial, capital, and technology plans (Dickeson, 2015).

Theoretical Model Explaining the Cycle

Structural contingency theory is a foundational theory in the field of business strategy, stating that business performance is contingent on the fit between internal structure and external environment. It explains the interactions of environmental factors, organizational change, and organizational performance. When something changes in the external environment, business performance declines until the business is restructured to return to optimal fit (A. D. Chandler, 2013; Burton R. Clark, 2008; Burton R. Clark, 2008/1966). Structural contingency theory is the central paradigm of a theoretical model explaining the cycle of expansion and contraction in higher education and also explaining the internal change resistance that slows the response of institutions to changing external pressures.

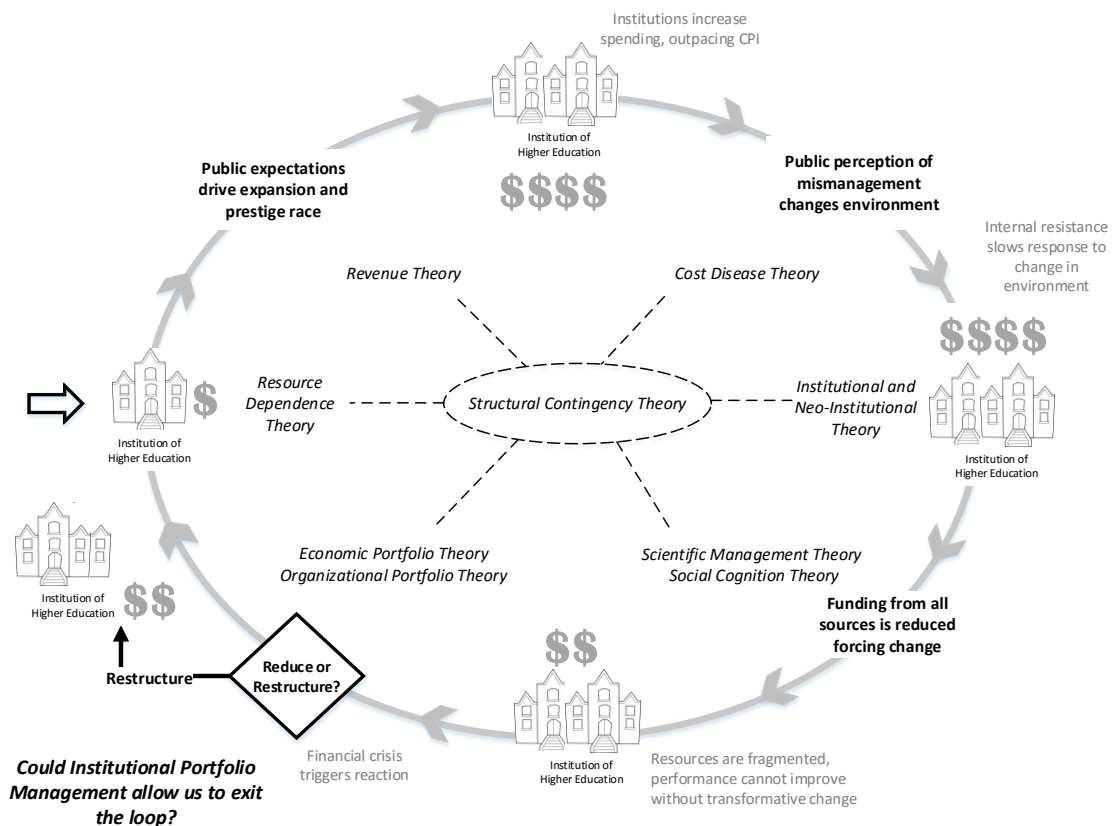
Structural contingency theory posits that a relationship exists between the structure of the organization and its performance and the nature of that relationship is contingent on external variables, referred to as contingencies (A. D. Chandler, 2013; Donaldson, 2001; Lawrence & Lorsch, 1986; Pfeffer & Salancik, 2003; Sporn, 1999). When an organization is performing well, its structure is well fitted to the external

variables, such as market environment, resource availability, or competition. When an external, or exogenous, variable changes, it changes the relationship between the organizational structure and the organization's performance. The organizational structure is now in misfit with its environment, which in turn degrades performance. For example, when societal expectations change to demand more job-oriented educational programs, a for-profit institution or even a two-year institution might shift their program portfolio to incorporate more job-oriented programs and meet that expectation, where a four-year institution does not do so as quickly. The four-year institution could be perceived as non-responsive to societal needs, fostering decreased public support. When performance degrades sufficiently, it prompts the organization to redesign its structure to bring it back into fit with its environment. Forces internal, or endogenous, to the organization affect how the organization adapts to the changed environment. Lex Donaldson (2001) states that managers make unit-level changes that improve unit-level performance sufficiently to satisfy the concern; or as the term has been coined, managers *satisfice*. Donaldson goes on to say that because unit-level managers do not see overall performance effects and are motivated to satisfice, performance improves just sufficiently to prevent a crisis but remains sub-optimal. To carry through the example, an academic dean might initiate a more job-oriented program that in turn engenders public support, albeit on a small scale, but sufficient to assure the dean that she, at least, is responsive within the appropriate academic discipline. Concurrently, the career services unit could increase its emphasis on practical job opportunities for existing program majors. These incremental changes are positive and satisfy the unit leaders, but are not sufficient to transform the institution *enough* to satisfy the changed expectations of society. An organization can remain in this

sub-optimal state for an extended period of time unless and until performance degrades to a crisis point, which triggers a more transformative change.

Although structural contingency theory has not been applied to institutions of higher education, numerous theories of organizational change that have been well studied in higher education elaborate a piece of structural contingency theory. *Figure 2.1* presents a conceptual model of this cycle and the explanatory theories as they tie into structural contingency theory.

Figure 2.1. Theoretical Model.



The cycle goes round and round, so like a carousel, one can jump into the explanation at any point. A logical place to start is with the early dependence of institutions on the resources available to them, hypothetically before any change in the environment occurred. From that point reading clockwise:

- Resource dependence theory establishes that institutions are influenced by external resources: Organizations are dependent on the ecosystem of resources available to them, including funding, and are driven by the need to obtain and maintain adequate resources (Burton R. Clark, 2008/1966; Pfeffer & Salancik, 2003).
- Revenue theory explains the prestige race: Institutions spend as much money as they can obtain to meet rising expectations, an explanation for the escalating price of higher education (Bowen, 1980).
- Cost disease theory supports price inflation relative to CPI: Higher education is a service-intensive industry of highly-skilled, and therefore higher-priced, labor. Technological innovations save labor costs in the manufacturing sector but do not save labor costs in the service industries; in fact, savings in manufacturing eventually further drive up the labor costs of service industries, outpacing the Consumer Price Index (Archibald & Feldman, 2008a).
- Institutional and neo-institutional theory rationalizes why institutions seem unresponsive to external pressures: Institutions are collections of individuals whose decisions are motivated by pressure to conform to social norms and isomorphism (Oliver, 1991) and who thereby enact an environment of collective decision making (Tierney, 2008).

- Scientific management theory rationalizes how institutions might respond to external pressures: Organizations are run by rational decision makers who scan the environment for information and resource availability, then systematically plan and manage performance accordingly (Kezar, 2014).
- Social cognition theory explains the difficulty of transformative change: Individuals within an organization must challenge deeply held beliefs and assumptions to create a new paradigm, and enough individuals must accept the new paradigm for a large-scale or deep-scale change to be realized (Kezar, 2014)
- Economic portfolio theory is a foundation to intentional performance management: Assets can achieve higher performance if managed as a collection that are diversified and offset against each other to optimize risk and return on investment (Markowitz, 1990).
- Organizational portfolio theory applies economic portfolio theory to organizational performance: Organizational resources function as a collection of assets that behave like an economic portfolio in that the organization can achieve higher performance if its resources (financial, human, facilities, etc.) are managed as a collection to optimize risk and return (Donaldson, 2000).

Structural contingency theory ties all of the supporting theories together by explaining the relationship between organizational structure and performance. The performance of an organization is contingent on organizational structure being well fitted to external variables (resource dependence theory), such as resources or funding among others, which change. Changes in external variables (cost theories) require the

organization to restructure to return to fit with its environment and therefore return to high performance. However, internal forces, especially managers, unintentionally counteract and slow the response (institutional and neo-institutional theory) in a sub-optimal performance state until a crisis point is reached and a transformative change (social cognition theory) is needed to recover. Organizations eventually recognize the overall performance trend (scientific management theory) and intentionally restructure in response (economic and organizational portfolio theories), returning to fit with environmental variables, until the environmental variables change once again.

The intentional restructuring can be done in a variety of ways: one of them being program prioritization and another the related practice of portfolio management. As I illustrate in this dissertation and elaborate in greater detail in following sections, program prioritization and portfolio management have evolved in parallel and share many characteristics. Program prioritization in higher education evaluates all academic and administrative programs against a set of preselected criteria to determine alignment with institutional priorities and make resource allocation decisions accordingly, whether augmenting a program with additional funding, reducing funding, or eliminating a program entirely. Portfolio management works the same way in private industry. The major differences are that program prioritization is often applied as a one-time fix and met with resistance and suspicion that it is a willful and subjective attack; portfolio management is applied as an ongoing process and recognized as a rational decision-making process.

The model proposes that the refined framework of institutional portfolio management, which blends program prioritization with portfolio management, could

intervene to manage the cycle by continually realigning resources with strategic objectives in response to changes in external variables such as funding and public perception. In this framework, the external environment and institutional performance is continually analyzed; new academic or administrative programs are evaluated in the same manner for their potential to meet institutional goals and performance objectives. When new programs are added, or when a change in the external environment occurs, resources are redistributed within the portfolio to accommodate the new program or the exogenous change with the intent of maintaining or improving overall performance. Assessment of existing programs informs portfolio management: struggling programs are evaluated for resource redistribution, either augmenting or reducing resources or eliminating the program altogether if it no longer serves institutional priorities or is feasible to maintain. Also as part of this practice, changing environmental demands are continually monitored and predicted and institutional strategies are adapted, which in turn influences goals and subsequent resource redistribution. All of this is done persistently and in slow motion, rather than reactively. In this manner portfolio management therefore intentionally and continually maintains alignment of resources with strategic objectives to maintain high performance in relation to external pressures. Intentional and ongoing management of institutional resources could mitigate the cycle of expansion and contraction that heretofore in higher education has been a reactive cycle seemingly beyond control of institutional leadership.

The work of this dissertation also supports the application of structural contingency theory in higher education. The first study I conducted, presented in Chapter Three, found evidence in the interviews of institutional leaders of cultural resistance to

the dramatic change of program prioritization. One leader described the intent of undertaking program prioritization that did not gain traction within the institution for several years, until a budget crisis created a sense of urgency for change. The article presented in Chapter Five illustrates the disaggregated approach to planning that many institutions satisfy with, by having a collection of unit level plans, at best connected to the institutional strategic plan, but typically not connected with each other. Each unit manager is planning improvements and strategies within the scope of their bounded rationality and not in a holistic manner.

In the following sections of this review I organize literature around structural contingency theory by starting with the historical development of the cycle. I then present literature of the operating context at both the sector and institutional levels that influenced the cycle. To support the use of variables and discussion of institutional performance in the manuscripts, I summarize the literature on performance indicators, metrics, and analysis. I conclude with literature covering portfolio management and program prioritization to elaborate the details of the disciplines and their parallels.

Historical Development of Program Prioritization

The early history of program prioritization was deduced from the cycle of mission fragmentation and contraction found in historical literature as presented in Chapter One. Contemporary authors have summarized the cycle of expansion and economic crisis in higher education at a sector level, providing foundational literature leading to the present day. This section expounds on the history presented as background to this study in

Chapter One by further examining related literature of historical consequence. In a subsequent section I present literature on contemporary program prioritization.

Elaine El-Khawas (2011) looked at the history of higher education through the lens of economic crises, to better inform leaders facing economic crises today. As in Thelin's work, El-Khawas presented the eras of the Great Depression and the World Wars as leading crisis points. In the 1930's, most colleges and universities were in financial distress, resulting in institutional closures and mergers. The growth in public junior colleges and fields of practical study also placed pressure on institutions of more traditional four-year programs. During the World Wars, enrollments dropped as men of college age joined the war effort. The wars ultimately spurred economic growth, which led to expansion of programs and services. El-Khawas also describes the economic slow-down of the 1980's as a crisis point for higher education, driving retrenchment of programs, hiring, and general expenses. One of El-Khawas' conclusions questions whether colleges and universities have become too fragmented by program proliferation. Although not explicitly referred to as such, this suggests whether program prioritization is a potential solution to the cycle of fragmentation and proliferation.

From a global perspective, Schofer and Meyer (2005) evaluate the drivers of expansion and contraction across national boundaries. Rather than economic conditions, the authors identify conditions of secondary enrollment with strong links to world identity as drivers of expansion. They note their findings are consistent with institutional/neo-institutional theory, applying that theory to the embeddedness of organizations within global societies. Schofer and Meyer's study provides support for the

use of institutional/neo-institutional theory as one of the foundational theories for this dissertation study.

John Thelin's (Thelin, 2011) history of American higher education gives us a comprehensive view into the cycle of expansion and program proliferation that resulted in the contraction of program prioritization. Detailed in Chapter One as the background to modern-day program prioritization, Thelin describes higher education through each era of United States history. Since the early 1800's, higher education has experienced driving forces toward expansion and program proliferation interspersed with driving forces toward contraction and program prioritization. Beginning in the 1860's, Thelin provides evidence that institutions were adapting to changing sector-level forces by adding curricula, such as agricultural programs in response to the Hatch Act of 1887 and research programs in response to the World Wars. These periods of program proliferation fragmented available resources, as traditional programs were still sustained. Rather than redirect available resources from traditional programs to fund new programs, institutions instead sought increased funding from state appropriations, donors, or tuition. Duderstadt and Womack (2003) support this explanation with their assertion:

Universities usually begin with the assumption that all of their current activities are both worthwhile and necessary. They first seek to identify the resources that can fund these activities. Beyond that, since there is always an array of meritorious proposals for expanding ongoing activities or launching new activities, the university always seeks additional resources. It has only been in recent years that the possibility of reallocating resources away from ongoing activities to fund new endeavors has been seriously considered. (p. 115)

One of Thelin's conclusions about present-day higher education that echoes Duderstadt and Womack is that "American colleges and universities have wandered into

a state of continual expansion characterized by overextension of functions without clarity of purposes” referring to a “drift in mission and character” (p. 361). This is what I refer to as *mission fragmentation*, where resources are overextended across too many programs, no matter how meritorious. Where the term *drift* conveys a move away from purpose and lack of focus, it does not convey the detrimental impact to all programs and the overall loss and *fragmentation* of resources. Undernourished programs cannot thrive.

Following on this history of higher education that evolved through cycles of expansion and contraction, in 2006 the United States Department of Education released what is commonly referred to as the Spellings Report but is formally titled “A Test of Leadership: Charting the Future of U.S. Higher Education” (United States Department of Education, 2006). The Spellings Report acknowledged higher education as one of America’s greatest success stories and a world model but also called upon it to improve performance in critical areas of access, cost and affordability, financial aid, learning, transparency and accountability, and innovation. In 2008 this was summarized more succinctly as the *Iron Triangle* of cost, access, and quality (Immerwahr et al., 2008). The three-point iron triangle in higher education resonates with the triple constraint in portfolio management of cost, time, and quality (Project Management Institute, 2008; Rad & Levin, 2006). Both access and time refer in a sense to productivity or throughput, where access to a wider volume of students yields greater throughput of graduates and where longer time in a production schedule yields greater throughput of product. In higher education, students are both our graduates and our product. For purposes of this dissertation we will use the terms cost, throughput, and quality, where throughput refers to a wider range of incoming students and a higher volume of graduation.

Sector Contextual Literature

According to structural contingency theory, institutional performance is influenced by contextual factors at the sector and institutional levels. Sector-level context includes such things as funding models and accountability trends. In this section I review the literature of the theories and trends at the sector level that influence the cycle of expansion and contraction and the performance of higher education institutions within that cycle.

National and societal trends affect the entire sector of higher education, that is to say, the tide lifts all boats equally, or has comparable effect on all institutions of higher education. Trends of particular relevance to structural contingency theory and institutional portfolio management include cost theories, the accountability movement, funding trends, and portfolio theories. Institutional theories of particular relevance include resource dependence theory, institutional change theories, scientific management and social cognition theories. These are but a few of the many theories explaining the world of higher education. I selected these theories to review because they each expound on a key element of structural contingency theory, thus providing support for its application in higher education. They also explain the factors that drive institutions to implement program prioritization and the reasons for the resistance thereto. The selected theories also resonate with the pattern of themes, such as a weak or strong culture and its effect on resistance to change, found among the institutional leaders who had undertaken program prioritization in my pilot study presented in Chapter Three.

Revenue Theory of Cost

Much work has been done on the rising price of college education and the cost factors that could be driving the increase in price for consumers (Layzell & Caruthers, 2002; Wellman, 2006). Studies of college costs and price indicate that instructional expenditures at public institutions have not been increasing over the past 20 years and have not been exceeding the inflation rate of the Consumer Price Index (CPI). However, the price of college that students pay at public institutions has been increasing and outpacing the CPI as state appropriations per student decline (Cunningham et al., 2001; McPherson & Shulenburger, 2010; Middaugh, 2005; Wellman, 2010).

Howard Bowen's 1980 seminal work on the costs of higher education, still quoted by many authors today, posits the *revenue theory of cost* in higher education in which the "dominant goals of institutions are to achieve educational excellence, prestige, and influence" (Bowen, 1980, p. 19). The theory further states that there is no limit to the amount of money that could be invested in this continual quest. Each institution raises as much money as it can and spends as much as it raises. The resulting effect is a trend of continually increasing price, based on continually increased expenditures, due to continual pursuit of prestige, growth, and excellence (Bowen, 1980; Powell et al., 2012).

Cost Disease Theory

Other authors have studied and refuted the revenue theory of cost, preferring the *theory of cost disease* offered by authors such as William Baumel and William Bowen (Archibald & Feldman, 2008a). Cost disease explains that service-intensive industries rely on highly skilled labor at premium salaries. While manufacturing industries have

seen decreases in labor costs due to mechanization, service industries have not realized similar productivity improvements because the nature of their industry, e.g. teaching or healthcare, cannot replace highly educated labor with technological innovations.

Assembly lines are not yet teaching or healing; the care of students and the care of patients requires a lot of human intervention and time. In comparison to CPI trends based largely on manufactured goods that have realized productivity improvements, highly educated service industries perform poorly. Additionally, technological innovations in manufacturing have shifted profits to fewer but more skilled laborers, increasing their salary base over time, which in turn has driven up the cost of the labor required for highly educated service-intensive industries and thus driven up the price of service (Archibald & Feldman, 2008a, 2010; Wellman, 2006, 2010). Higher education is not simply a service industry; it is also, or even more so, a social good. The nature of higher education, however, matches the characteristics of a highly educated service-intensive industry, in that it relies on intensive human interaction by highly educated individuals.

Bowen foreshadows program prioritization as a future solution by saying “The higher educational system itself provides no guidance of a kind that weighs costs and benefits in terms of the public interest.” (p. 20) and asserting that without that self-regulation, the responsibility for setting those limits must lie elsewhere, with the funding sources—the legislators issuing state appropriations and the citizens paying student tuitions. In support of this assertion, a study conducted for the National Center for Public Policy and Higher Education in 2008 (Immerwahr et al., 2008), summarized the sentiments of over two dozen college and university presidents as:

Most of the presidents believe that if one wants to improve the quality of higher education, one must either put more money in the system or be prepared to see higher education become less accessible to students. Conversely, cutting costs in higher education must eventually lead to cuts either in quality or access. (p. 4)

This is what the study refers to as the iron triangle of access, quality, and cost where any change to one component will cause a reciprocal change to another. This view supports Bowen's revenue theory of cost (1980), where institutions raise what money they can and spend what they raise in an unlimited pursuit of excellence. Another factor fueling the competitive "arms race" toward excellence and prestige is the difference in instructional spending between private and public institutions. Public institutions increase student tuition as a funding source to offset the decrease in state appropriations where private institutions invest their tuition price increases into educational support (McPherson & Shulenburg, 2010; United States Government Accountability Office, 2007).

Accountability Movement

Scrutiny of institutional performance has been building over the last couple of decades, with greater demand placed on institutions of higher education to demonstrate their efficiency and effectiveness and improvements thereof (Gumport, 2007; Powell et al., 2012; Serna, 2013). F. King Alexander (2000) summarized the trend of the 1990s as the "accountability movement" (p. 413) describing greater government interest in assessing higher education performance and intervening through management or funding changes to influence performance. Alexander establishes that governments have shown increased use of performance funding models since the early 1990s, citing the drivers of

this movement as the massification of higher education from earlier decades colliding with limited public funding availability. This is an example of an environmental or exogenous change and a shift in the expectations of higher education from a social good to an industry. Performance-based funding arose from the accountability movement, as explained by Hillman and Tandberg (2014):

Performance-based funding changes the traditional way states subsidize public higher education. Under this funding model, public colleges receive state appropriations according to how well they are meeting broader educational goals such as college completions and degree production. (p. 827)

While state and national government bodies recognize the value of higher education and a more educated citizenry as an economic and scientific research engine, funding it remains a lower priority than other demands on public budgets (Serna, 2013). Adrianna Kezar (2004) describes the changing demands on institutions as a fundamental shift in the charter between society and the institution of higher education as a whole, from the model of a public good to an industrial model meeting short-term demands for workforce development. She cites examples throughout history of public pressure on institutions to respond to new societal needs, such as modernized curriculum, research, public service, or greater access to returning war veterans, now pressuring institutions toward a more corporate model of accountability and management.

The seminal work of the accountability movement is the report known as the Spellings report, commissioned by United States Secretary of Education Margaret Spellings in 2006 (United States Department of Education, 2006). The commission called upon institutions of higher education to improve access to a wider range of students, to improve quality but also efficiency and affordability, to create new knowledge and

prosperity with a greater competitive position among nations, and to do so with rapid agility in response to changes in technology and global trends. The Spellings report criticizes higher education as “at times self-satisfied, and unduly expensive” (p. ix) comparing it to industries that have failed to respond to changes in the environment and implying that without fundamental change it is headed toward obsolescence. Structural contingency theory predicts the same conclusion: that organizational slow to respond to changes in the environment slide toward failure unless and until a crisis triggers a correction (Donaldson, 2000).

The Spellings report, as a culminating work of the accountability movement to that date, presents an inflection point in the structural contingency cycle, increasing pressure on institutions to demonstrate their quality, access, and efficiency. One of the organizations increasing public pressure was the National Center for Public Policy and Higher Education (2008) that issued periodic “*Measuring Up* report cards” on the performance of public higher education state by state and nationally in aggregate. The reports looked at preparation of high school students for tertiary education, access and affordability, completion rates, and quality outcomes. The intent of the reports was to promote self-directed performance improvement by state governments of their public higher education institutions against national and international benchmarks, through the use of policy or funding interventions. The language of the Spellings report, citing issues with “efficiency, productivity, transparency, and accountability” (p. 9) and the *Measuring Up* report cards, grading higher education and demanding improvement, are examples of increasing pressure from the public and public sector agencies demanding performance improvement in higher education. The increasing pressure generated reaction from

institutional leaders and academics. The reaction to *Measuring Up* criticized two points in particular: lack of focus on learning outcomes and lack of correlation between governance intervention and state grades. A time series analysis indicates the correlation to state grades lies in uncontrollable characteristics such as state affluence and demographics (Volkwein & Tandberg, 2008) that in turn influence costs and completion rates. For example, states that have a high population of disadvantaged students require public institutions to spend more on supplemental support services to aid their success.

In a seminal example of the reaction from higher education, a report titled “The Iron Triangle: College Presidents Talk about Cost, Quality, and Access” (Immerwahr et al., 2008), also published by the National Center for Public Policy and Higher Education, presented findings from interviews with over two dozen presidents from a variety of higher education institutions to add their perspective to the public dialog. The subjects of the study describe the competing demands for reduced cost, maintained quality, and increased access as being in a reciprocal relationship they refer to as the “iron triangle” (p. 4), wherein a change in one causes an inverse change in another. For example, maintaining quality and increasing accessibility to a wider range of students costs money. To reduce costs you must either sacrifice quality, for example with a higher student-to-faculty ratio, or decrease access, for example by offering less support to disadvantaged students making it harder for them to complete (Daniel, Kanwar, & Uvalic-Trumbic, 2009; Immerwahr et al., 2008).

Note the similarity between the *iron triangle* of cost, quality, and access in the sector of higher education compared to the *triple constraint* of cost, quality, and throughput in the discipline of project and portfolio management. The triple constraint is

so named because a change in one causes an inverse change in another. For example, increasing throughput, e.g. speed of product produced, or increasing quality, e.g. materials used to produce the product, costs money. To reduce costs you must either sacrifice quality, for example with lesser-grade materials, or decrease speed, for example by reducing the number of people working on the project (Project Management Institute, 2008; Rad & Levin, 2006). To correlate this with higher education, to reduce costs you must sacrifice quality, for example with reduced services to support academic achievement, or decrease throughput, by graduating fewer students so they are assured adequate available support services.

Another example of the literature in response to increasing public pressure is a study published by J. Fredericks Volkwein and David A. Tandberg in 2007 that examines state characteristics in comparison with the *Measuring Up* report cards. Through time series analysis and ordinary least squares regression, the study found little association between state policies or interventions in higher education performance and the results of the *Measuring Up* reports. The indicators used in Measuring Up to demonstrate institutional performance were associated with state size and economics, among other environmental factors beyond state or institutional control. And in fact, the time comparison showed that interventions such as performance systems and governance in the prior decade were not corollary to the *Measuring Up* results (Volkwein & Tandberg, 2008).

Accountability in higher education is complicated by many confounding factors and conflicting demands, yet the movement is by no means quelled (Alexander, 2000). Economics, demographics, and governance structures play a large role in institutional

performance, with availability and allocation of resources varying by state characteristics and institutional mission. (Knott & Payne, 2004; Serna, 2013; Volkwein & Tandberg, 2008). The goals of reduced cost, sustained quality, and increased access cannot be simultaneously achieved (Immerwahr et al., 2008; Powell et al., 2012; Project Management Institute, 2008). Yet states continue to intervene in institutional management in an attempt to achieve greater accountability and change in institutional management.

Funding Trends

Another example of a change at the sector level that changes the fit of an institution in relation to its environment is performance-based funding, wherein states allocate public funding based on outcomes such as retention and completion rather than inputs such as enrollments (Dougherty, Natow, Bork, Jones, & Vega, 2013). State-funded institutions are not the only type of institutions subject to changes in funding trends, however. Impactful funding trends are also occurring in privately-funded institutions, where economic downturns have a harmful effect on endowments (Dickeson, 2010) and where religious institutions face a declining student population (Milkovich, 2013). Nevertheless, performance funding as a trend has been the only intentional intervention in the management of institutional performance.

As states are interested in improving institutional performance, and as performance funding is supposedly a direct lever to apply toward improved outcomes, one might assume that performance funding would be widely applied but such is not the case. Performance funding has been applied in some states and not others, and of the

states that have implemented it, some have even reversed the action (Hermes, 2012). At least one of the reasons for failed or reversed performance funding initiatives is the difficulty in selecting metrics that are both meaningful and reasonably obtainable. Although the government continues to demand improvement in institutional performance, the trend toward revised funding models has been indistinct.

Performance funding is not a recent invention, but it has recently been re-invented and continues to evolve. Early experiments date back to the 1960s, with the state of Tennessee maintaining performance funding since 1979. Between 1979 and 2007, 26 states initiated performance funding trends while 14 states also eliminated them. Problems with the early funding models included too small of a percentage of funding allocated to performance outcomes, making it ineffective in results while still burdensome to manage. The newest wave of performance funding trend is sometimes referred to as *performance funding 2.0*, in a reference to software naming conventions. This latest iteration still focuses on outcomes, but devotes a greater percentage of funding, and attempts to give institutions greater flexibility in meeting them, while giving states better alignment between institutional priorities and state priorities (Hermes, 2012; McKeown-Moak, 2013).

A study by Mary P. McKeown-Moak in 2013 examines performance funding systems in 32 states, with an in-depth look at six state models that were in place under the older models of performance funding and are being updated in light of the more recent 2.0 trend. Common guiding principles to support performance funding models were inductively reasoned from the six detailed models. The principles include measuring performance within-subjects over time, due to the unique mission and characteristics of

each institution, which affect performance. Common among the more successful programs were factors such as having good data systems, using few but relevant metrics, and including indicators related to state and regional goals.

In spite of these improvements, a study in 2010 found that performance funding did not have an influence on changes in institutional performance metrics. The study evaluated data from the Integrated Postsecondary Education Data System (IPEDS) for 467 institutions using graduation rates as the teaching and learning performance metric and 123 institutions using research expenditures as the research productivity performance metric. Through hierarchical equation modeling, the study concluded that institutional characteristics accounted for most of the variance in performance. The performance funding model had no correlation with performance, regardless of the variation of performance funding used or the length of time it had been in place (Shin, 2010).

When state or private funding declines, institutions have responded to the environmental change, often by seeking alternative funding sources, such as increased tuition and fees (Powell et al., 2012; Serna, 2013). Not all institutions have the option to increase student tuition as an alternate funding source when state appropriations decline, whether due to defined statutory limitations or public pressure (Serna, 2013). Public perception holds that the price of college is increasing because institutions are increasing their spending, not because state appropriations have declined (Wellman, 2010). An alternative to seeking increased funding in student tuition in response to a decline in state allocations is to change how existing funding is allocated, as suggested by Dickeson, Duderstadt, and others (Dickeson, 1999, 2010; Duderstadt & Womack, 2003). According to a study I presented at the Association for the Study of Higher Education, leaders of

over 20 institutions considering the use of program prioritization as a solution to improve institutional performance cited fiscal pressure, changing societal expectations, and the pursuit of excellence as the drivers of that consideration (Milkovich, 2013).

Duderstadt and Womack (2003) effectively summarize the impact of funding trends on higher education institutions in general with their own call for program prioritization when stating:

There will have to be much more care in setting priorities, along with a painful acknowledgement that in order to do something new one generally will have to eliminate something old. Innovation by substitution, not growth by incremental resources, will have to become the operative management philosophy. (p. 117)

Comparing the costs and benefits of individual programs within the entire portfolio, prioritizing programs and aligning funding with those priorities, eliminating or reducing support for lower-priorities, and recognizing that all programs are meritorious but some are more meritorious than others, are the essential principles of program prioritization. It is a balancing act of multiple intersecting criteria, not a simple cost and effectiveness equation. As explained in the manuscript presented in Chapter Six, programs of high cost and low throughput are just as likely to be essential to the institution as programs of low cost and high throughput; cost is but one of many factors that inform portfolio decisions. Somewhere substitution must occur if new programs and innovations are needed and increasing funds are not available. Trends in the major funding sources for higher education, namely state appropriations and student tuitions, therefore have a direct impact on the need for and application of program prioritization particularly among the public institutions of higher education.

Institutional Contextual Literature

According to structural contingency theory, institutional performance is also influenced by contextual factors at the institutional level. Institutional-level context includes such things as the culture and sociology of organizational change. In the study presented in Chapter Three, the strength of culture combined with the level of resistance was found to play a role in the success of program prioritization. In this section I review the literature of the theories and trends at the institutional level that influence the cycle of expansion and contraction and the performance of higher education institutions within that cycle.

Resource Dependence Theory

Resource dependence theory explains the interaction between institutions and their environmental resources. Resource dependence theory views organizations as dependent on their environment and the resources they obtain, which in turn influences their effectiveness and ability to survive. According to this theory, organizational performance exists in an ecosystem of resources that it needs and its performance is therefore affected by availability of resources, be they funding, labor supply, or raw materials (Gornitzka, 1999; A. J. Hillman, Withers, & Collins, 2009; Oliver, 1991; Pfeffer & Salancik, 2003; Sporn, 1999). Burton Clark (2008/1966) adds that as institutions have evolved toward professionalization of faculty, individual faculty have become dependent on external sources of funding, which yields them not only financial support but also power within the institution for their ability to bring in revenue. Institutions are dependent on the funding resources of their environment, be it public

funding for state institutions, grant funding, or donation funding for private institutions. Structural contingency theory, our central theoretical paradigm, starts with the dependence of institutions on available resources in their environment. Changes in those resources is but one exogenous change that can trigger the cycle leading to the need for program prioritization.

Organizational Adaptation

Theories and studies of organizational adaptation in higher education support the application of structural contingency theory as a paradigm. According to Cameron, “‘Organizational adaptation’ refers to modifications and alterations in the organization or its components in order to adjust to changes in the external environment” (Cameron, 1984 p. 123). Structural contingency theory also posits that organizations change in response to changes in their environment, and the ideal structure of the organization is contingent on the variables of its environment (de Zilwa, 2007; Donaldson, 2001; Sporn, 1999). A study by de Zilwa of 112 academic units supports that position in higher education with its findings that the units adapted to changes in their environment which pushed them “far from equilibrium” (de Zilwa, 2007 p. 571). The units responded to the environmental changes in different ways linked to their cultural norms and heterogeneity. Scholars have studied how culture promotes change and how change modifies the culture (Tierney, 2008). Kezar and Eckel present a third possibility: that culture shapes the way change happens in an institution (Kezar & Eckel, 2002). Structural contingency theory holds that organizations enact or resist change in response to changes in their environment. The literature in the following sections describes the ways that individuals

and units in institutions of higher education enact or resist change, including attempts to prioritize programs.

Institutional and Neo-institutional Theory

Institutional and neo-institutional theory (hereinafter referred to as institutional theory) provide a supporting explanation for the slowness of change in higher education, supporting the *satisficing* element of structural contingency theory. Institutional theory views higher education as an institution of society rather than an industrial service provider, and as an institution, it should respond slowly and deliberately to changes in society or other environmental factors. A social institution, according to institutional theory, should be more enduring than the fluctuations of market pressures (Kezar, 2014; W. R. Scott, 1987, 2008). However, institutions are still subject to external pressures and must eventually respond to survive (Gornitzka, 1999). Institutionalism values conformity and convention as stabilizers against rapid change; external pressures are met by internal norms, which shapes the speed and nature of change. Christine Oliver (1991) compared the institutional perspective with the resource dependence perspective and found several areas of convergence. Both perspectives illustrate how institutions interact with external pressures and seek to preserve their interests and legitimacy; however, according to Oliver, the institutional perspective illustrates that adaptation to external forces is less about conscious choice and more about unconscious conformity, where the resource dependence perspective illustrates more active choice and conscious attempts to control resources and reduce uncertainty. Oliver suggests that a multiplicity of perspectives better explain organizational change in higher education. The convergence factors of

institutional theory and resource dependence theory support the premise of structural contingency theory, in that managers and organizations enact change through actions that have counter-effects and thus slow performance improvement in response to environmental changes that create a misfit between the organization and its environment (Donaldson, 2000, 2001). One of the arguments they may pose for doing so is that of institutional theory—that an institution should be slow to change only as much as necessary, or to a satisficing level, rather than reactive to the environment.

A subset of institutional theory focuses on the agency of individual actors within an organization, also referred to as *institutional entrepreneurialism*. The theory of embedded human agency defines the paradox wherein institutions are the product of human actors as well as the influencers of human actions. Those individuals who break with dominant group norms are referred to as institutional entrepreneurs (Battilana, 2006). Battilana hypothesizes that social position within an institution affects an individual's view of the organization and influences the extent to the actor may be able to resist or enact change. Those individuals of higher social status or with strong connections to individuals of higher social status have the social capital and access to resources required to succeed. Where institutionalism seeks to serve the interests and legitimacy of the organizational unit (Oliver, 1991), institutional entrepreneurs seek to serve their own interests and legitimacy, resisting change through passive adaptation when they do not share the interests of their executives and when they have sufficient social capital to do so (de Zilwa, 2007). Institutional entrepreneurialism elaborates the premise of structural contingency theory, in that individuals within an institution of higher education resist change when the change does not align with their interests. This

would be particularly true in higher education, where a high number of actors, such as faculty, view the organization through a strong sense of social capital and right to self-govern (Birnbaum, 1988; Duderstadt & Womack, 2003). It also illustrates the motivation of managers to satisfice, rather than force any more change than necessary on constituents who do not see the change as aligning with their own interests, particularly where attempts to prioritize programs invites the specter of possible program closures.

Scientific Management and Social Cognition Theories

The remaining schools of thought on higher education sociology that elaborate a premise of structural contingency theory are those of scientific management and social cognition, well summarized by Adrianna Kezar (Kezar, 2014). Scientific management is a prescriptive change process whose practitioners apply a standard set of tools to enact change regardless of the context. In this perspective, managers recognize and logically respond to external forces by driving internal change. A hallmark example of a scientific-management approach to change is the work of John P. Kotter advocating a standardized set of stages and tools (Kotter, 1998, 2008). Social cognition theorists describe how individuals construct their environment, make sense of it, and connect with the organization. In this perspective, people's perceptions of the organization are the reality in which they live, thus shaping their ability or desire to change to resolve a sense of cognitive dissonance. Because of this, among other factors, templates for managing change such as Kotter's cannot be applied (Kezar & Eckel, 2002).

In describing the change process in institutions of higher education, Kezar proposes that multiple theories must be understood and used by change agents to

appropriately identify and successfully implement strategies for change. Scientific management strategies, such as strategic planning and steering committees, can enact visible, first-order change at largely superficial levels. However, significant cultural change requires social cognition strategies, such as altering paradigms and creating new mental models, to enact the deeper second-order change in individual mindsets needed to truly transform an organization and sustain the change (Kezar, 2014). The interplay of these two perspectives illustrates a premise of structural contingency theory, in that organizations are slow to adapt to changes in the external environment because managers attempting to enact change face an uphill struggle, causing them to satisfice with an acceptable, incremental degree of change.

In this section I have illustrated how structural contingency theory presents a central paradigm around which numerous, more commonly applied theories and studies of higher education sociology and change can be shown to support it. Structural contingency theory encapsulates the cycle of mission fragmentation through program proliferation that eventually triggers a crisis. The supporting theories elaborate how institutions are dependent on the resources of their environment and how changes in those resources, i.e. reduced funding, require internal changes to maintain performance. Yet, although managers may attempt first-order changes through strategies such as strategic planning, they are met with resistance from entrepreneurial actors who are preserving their own legitimacy and interests or group members who are interested in complying with strongly-held institutional values and social norms. And so the managers accept an incremental but acceptable level of change within their own bounded rationality of decision making. This keeps the organization in an extended period of suboptimal

performance due to misfit with its environment until a crisis triggers a more transformative change, such as program prioritization, which requires a new mindset and fundamental reconstruction of environmental sense making by individual actors.

Institutional Performance Indicators

In this section I review the literature around institutional performance focusing on the indicators, metrics, and analytical models most often used, to provide the basis for the manuscripts. No single definition of institutional performance or the metrics to measure it exists; however, literature is available to better inform and guide our understanding. Even the term institutional performance has varied use, with some authors using effectiveness or efficiency interchangeably, and with even more variability in the criteria or indicators used to measure performance (Alfred, 2011; Cameron, 1978). Of particular difficulty is the measure of quality, which many authors agree is important but few agree on how to define, much less measure it (Alfred, 2011; Daniel et al., 2009; Toutkoushian, Dunder, & Becker, 1998). The selection of criteria, or performance indicators as they are contemporarily referred to, is also contingent on availability and reliability of data sources. That information which is easy to measure is not necessarily meaningful or valid, and that which is meaningful and valid is not necessarily easy to obtain (Burke, 1998; Burke & Minassians, 2002; Burke et al., 2002; McKeown-Moak, 2013). For example, inputs, i.e. the resources that go into a product, such as faculty salaries, are relatively easy to measure and could be considered representative of quality, if one believes that higher faculty salaries correlate with higher prestige. Outputs, i.e. the quantity or type of products produced, such as degrees awarded, are relatively easy to

measure and could be considered representative of productivity. However outcomes, such as quality of learning or the positive impact of an education on health or employment, are much harder to measure but meaningful to know (Barnetson & Cutright, 2000).

In the study of institutional leaders who had undertaken program prioritization, presented in Chapter Three, intended outcomes described in the interviews varied widely and were difficult to measure. For purposes of the study, I defined a successful outcome as the ability to reach a strategic goal because of program prioritization. For example, participants described successful outcomes as anything from absorbing a drastic budget cut to opening a new college.

Scholars of institutional performance have used a variety of performance indicators in their studies, and through their studies have attempted to develop a standard and accepted set of performance indicators that can be used to compare performance across institutions. While progress has been made, a standard set of indicators does not yet exist. The literature and dialog around institutional performance uses terminology that is sometimes unclear to readers, sometimes used interchangeably by different authors, and sometimes used with distinct meanings by other authors. *Table 2.1* clarifies and operationalizes the terms used in the discussion of institutional performance measurement. The sources cited either define the term or use the term congruent with the definition as written.

Table 2.1. Operational Definitions.

Term	Definition
Access	The volume and range of students who can attend and complete postsecondary education (Immerwahr et al., 2008; United States Department of Education, 2006).
Cost	The value of a product or service purchased, e.g. what a university pays for materials used to teach (Archibald & Feldman, 2010; Cunningham & Merisotis, 2002).
Effectiveness	How well a process achieves the intended goals, i.e. the quality of the outputs or outcomes (Cameron, 1978; Powell et al., 2012).
Efficiency	Ratio of outputs to inputs, e.g. the ratio of degrees awarded to expenditures (Cameron, 1978; Powell et al., 2012).
Input	Resources or raw materials submitted into a process to produce something, e.g. funding or staffing (Barnetson & Cutright, 2000; Burke et al., 2002).
Outcome	Long-term effects or benefit of the output of a process, e.g. employment rates (Barnetson & Cutright, 2000; Burke et al., 2002).
Output	The quantifiable results produced by a process that used resources, e.g. degrees awarded (Barnetson & Cutright, 2000; Burke et al., 2002).
Performance indicator	A variable that tells us something about the performance of a system, i.e. how efficiently or effectively it operates (Revelle, 2004).
Performance measure	A snapshot of the performance indicator at a point in time; the value of the variable (Revelle, 2004).
Performance metric	A comparison of the performance measure to any given standard, e.g. an institutional graduation rate compared to a national graduation rate (Revelle, 2004).
Price	The value of a product or service sold, e.g. the tuition that an institution charges consumers (Archibald & Feldman, 2010; Cunningham & Merisotis, 2002).
Process	The activities that transform inputs into outputs and outcomes, e.g. teaching or research (Barnetson & Cutright, 2000; Burke et al., 2002).
Productivity	Volume of output per unit of input. For example, if one instructor is a unit of input and student credit hours is the output then dividing student credit hours by number of instructors yields the teaching productivity per instructor unit (Middaugh, 2002).
Quality	No one can define it, but you know it when you see it.
Throughput	Volume and range of product that can be processed through a system (National Research Council, 2012).

What indicators are available tend to be grouped in broad categories of efficiency (ratio of outputs to inputs) and effectiveness (accomplishing goals) (Powell et al., 2012). A few researchers have studied the development of indicators and how the use of performance indicators influences our understanding of performance. Cameron (1978) conducted a study to identify criteria that were generally recognized as characteristics of institutional effectiveness, out of a broad set of 130 items. The study concluded that organizational effectiveness in higher education was multi-dimensional and varied across domains such as constituencies, analyses, missions, and a host of others. Cameron also pointed out that much research had focused on defining indicators of efficiency, often using costs per student or student-faculty ratios, with little work done on defining indicators of effectiveness or quality.

Following on the quest to identify ways of measuring effectiveness, Toutkoushian, Dunder, and Becker (1998) noted that peer assessments were one means used to determine program effectiveness. The authors undertook a study to determine the efficacy of that method, using the National Research Council's 1993 graduate program ratings as a sample. The program ratings were generated using peer assessments of faculty quality along with quantitative measures of research output. The results indicated a strong relationship between faculty quality ratings with research output but also found evidence of rater bias where raters likely had insufficient information to effectively evaluate a program and used their knowledge of faculty quality as a proxy that was not necessarily valid. Peer assessments cannot solely be used to measure quality or effectiveness based on these findings.

One study in particular evaluates how the use of performance indicators influences, rightly or wrongly, the discussion about performance. Barnettson and Cutright (2000) posited that performance indicators are instruments that shape not only how we think about issues but also what issues we think about. For example, a public agency that uses graduate employment rates as a performance indicator of higher education focuses public attention on individual benefit of employment and diverts public attention away from other social benefits. The authors also state that the very use of performance indicators to regulate institutional performance requirements shifts accountability from the institution to the regulator, which has the power to change regulations to improve performance.

Burke & Minassians (2002) also noted that the choice of performance indicators used by states to measure higher education reflects the priorities and interests of state policymakers. The authors studied the performance indicators most used by states with either performance reporting or performance funding models and found a wide range of indicators used with little consistency except for the indicators of graduation and retention that were used by most states. States with performance reporting models focused more on access, diversity and affordability while states with performance funding models focused more on indicators of efficiency and productivity. Their study also joined the chorus of findings that inputs and outputs are easier to measure than outcomes or quality. The selection of quantitative measures of inputs and outputs focuses public attention on efficiency and productivity and diverts attention away from the difficult-to-measure outcomes. While acknowledging the difficulty, the authors criticize the academic community for failing to develop good indicators of quality and outcomes.

Mary P. McKeown-Moak (2013) also evaluated state performance models and indicators used. Based on models that were deemed successful, McKeown-Moak developed a set of guiding principles for selecting and establishing performance indicators. Those principles included recognizing that continuous improvement is non-linear and non-infinite, developing indicators that are few in number and also relevant to goals at the state or local level, and that measures should not be driven by availability of data but that availability of data should be driven by appropriate measures. The author also relied on the model of measuring a balanced combination of inputs, processes, outputs, and outcomes rather than relying too heavily on any of them.

Finally, the National Research Council issued a policy report titled “Improving Measurement of Productivity in Higher Education” where they acknowledge the complexity of characterizing productivity for the teaching mission of higher education (National Research Council, 2012). Using the inputs-process-outputs-outcomes model, the panel of authors particularly note the necessity and difficulty of measuring quality in any of those components. The authors also testify to the competing demands facing higher education, wherein an increase in volume, be it wider access or higher graduation rates, has a counter effect on quality or cost. This statement echoes the concept of the iron triangle of higher education and the triple constraint in private-sector business, where quality, volume, and cost are in competition for improvement. As in the studies described above, the authors also caution that developing productivity measures will incentivize institutions to focus on activities that improve those metrics, perhaps at the expense of other important activities related to quality or service. Cautions notwithstanding, the report concludes that quality must be sustained and measured by other means, in parallel

with the development of productivity measures, that lack of productivity measures also carries problems, and the benefits of developing a solid model for measuring productivity outweigh the risks.

As these highlighted studies and reports show, determining appropriate measures of institutional performance is not easy. Policymakers and scholars in the field have not yet agreed on a common set. Challenges to doing so include the difficulty of capturing quality measures and the availability of appropriate data to use to generate meaningful information that guides institutions toward the right goals for improvement. Some argue that until good metrics and supporting data are identified we should not attempt to measure institutional performance, as poor metrics will drive behavior toward inappropriate goals (National Research Council, 2012). Nevertheless, attempts are continually made and the field of possibilities appears to be narrowing. As scholars develop a stable and agreed-upon set of performance metrics, practitioners of program prioritization should refine their practice to use the prevailing performance indicators.

Prevailing Performance Indicators

While the literature on institutional performance includes study and development of appropriate measurement models that to date are inconclusive, scholars concurrently use available indicators to study institutional performance as best they can with available and acceptable indicators. Themes have coalesced around the use and selection of performance indicators from the very studies that use them.

A primary theme prevalent in the literature around the selection of performance indicators is that comparisons must be confined to institutions of like characteristics,

mission, and discipline mix (N. W. Hillman et al., 2014; McPherson & Shulenburger, 2010; Middaugh, 2002; National Research Council, 2012; Powell et al., 2012). Preferably scholars are advised to use performance indicators to make longitudinal comparisons of performance improvement within an institution (National Research Council, 2012). The variability of performance among institutions is primarily due to the mix of disciplines within each institution (Middaugh, 2005); therefore, comparing institutions against other institutions has questionable validity when the different institutions have different combinations of disciplines.

Another theme in the literature is that the indicators selected must be meaningful and utilize information that is obtainable and reliable, in that it is consistently reported on across multiple institutions and state systems. Not all institutions report information to the same data stores or in the same way. The Integrated Postsecondary Educational Data System (IPEDS) is a system of data reporting common to institutions across the United States (B. L. Bailey, 2006; National Research Council, 2012) but does not include Canadian institutions. The Delta Cost Project is another source of institutional performance information but not all institutions participate (Wellman, 2010). The Delaware Study is another source of reported information but again only a subset of institutions participate (Middaugh, 2005).

A third theme is the importance of selecting the unit of analysis, i.e. some analyses are done at the institutional level, some at the departmental or discipline level and some at the individual level. Porter and Umbach (2001) explain the potential for error if the unit of analysis is not carefully controlled with a hypothetical example. Using the department as the unit of analysis, a department with a high percentage of female faculty

could demonstrate lower productivity than departments with a lower percentage of females. A researcher could interpret this to mean that individual female productivity is lower; however, an analysis at the individual level of the same department could indicate that the female faculty are more productive than their male counterparts even though the overall department is not as productive as others. This illustrates how the unit of analysis can yield different results from the same data and must be carefully managed.

In this section I compile a selection of commonly used performance indicators and list the literature sources that use them or support their use. I organize them according to the three dimensions of competing performance objectives described as the iron triangle in higher education literature (Immerwahr et al., 2008) and the triple constraint in business literature (Hossenlopp, 2010) operationalized into a single set as explained earlier: cost, throughput, and quality. In some cases, a performance indicator can be used to illustrate more than one dimension. For example, expenditures per student credit hour can be viewed as an indicator of cost passed on to the student and as an indicator of quality provided to the student. In each section I list the common indicators and then discuss some salient highlights of the indicators listed.

Indicators of Cost

The Delaware Study (Wellman, 2010) and the Delta Cost Study (Middaugh, 2005) are exemplars of work done to collect, dissect and explain the costs of higher education. In *Table 2.1* I list the cost indicators used to evaluate institutional performance and the sources that use or support them. I then discuss some highlighted points about the indicators listed.

Table 2.2. Performance Indicators of Cost.

Cost Indicator	Literature Sources
Cost per credit or degree	(National Research Council, 2012)
Expenditures per student credit hour	(Middaugh, 2002)
Expenditures per FTE faculty	(Middaugh, 2002)
Expenditures per FTE student	(N. W. Hillman et al., 2014) (Powell et al., 2012) (McPherson & Shulenburger, 2010) (M. Scott et al., 2006) (Hamrick, Schuh, & Shelley, 2004)
Instructional cost	(N. W. Hillman et al., 2014)

Expenditures per FTE student appear to be the most widely used indicator of cost and the most recent. This is an indicator of cost, as it is passed on to the student, but it is also an indicator of quality, as presumably more expenditures per student indicate a higher level of instructional quality provided to the student. Cost per credit or degree that is used by the National Research Council is a clearer indicator of cost passed on to the student, as it illustrates the cost that a student invests to complete a degree regardless of the quality of service provided.

Indicators of Throughput

Throughput addresses both the access dimension of the iron triangle, where in the higher education sector we attempt to intake and graduate a wider range of student characteristics in a timely manner, and the scope dimension of the triple constraint, where in the private sector we attempt to intake and produce a wider range of product features in a timely manner. Where throughput is concerned, teaching and research are considered

such different processes that they must be evaluated independently and using different indicators (National Research Council, 2012; Shin, 2010). This also allows for separately evaluating the performance of research-intensive universities from teaching-intensive universities.

For the evaluation of teaching throughput, graduation rate is commonly used because it is a primary purpose of higher education and because they are available in IPEDS (M. Scott et al., 2006). Graduation rate is typically looked at as percentage of students completing their degree within four or six years. However, Hillman et al argue for the use of annual number of degrees awarded per 100 students as a better indicator. The percentage of students completing that is reported by institutions into IPEDS does not take into account transfers in or out (N. W. Hillman et al., 2014).

For the evaluation of research throughput, publication or citation rates are commonly used. However, Shin makes a compelling argument that annual research expenditures is a better indicator. While citation rates are a good indicator of quality, they do not indicate volume, or throughput, and are associated with authors rather than institutions. Institutional publication rates are not easy to obtain, whereas research grant dollars awarded and annual expenditures are readily available through IPEDS. Because multi-year grants are awarded in a single year, annual awards are erratic and invalidate the results. Shin argues that expenditures are comparable to awards only more evenly distributed across the life of the grant. And, since most grant awards are federally funded through a very competitive process, one can assume that quality of research is controlled in that process.

Table 2.3. Performance Indicators of Throughput.

Throughput Indicator	Literature Sources
Graduation rate	(National Research Council, 2012) (Powell et al., 2012) (Asmussen, 2010) (Fung, 2010) (Shin, 2010) (B. L. Bailey, 2006) (M. Scott et al., 2006) (Hamrick et al., 2004)
Number of degrees awarded	(N. W. Hillman et al., 2014) (Brooks, 2005)
Time to degree	(National Research Council, 2012) (Burke & Minassians, 2002) (Brooks, 2005)
Student credit hours produced	(Middaugh, 2002)
Racial/ethnic diversity	(N. W. Hillman et al., 2014) (M. Scott et al., 2006)
Research expenditures in dollars	(Shin, 2010) (Brooks, 2005) (Dundar & Lewis, 1998)
Research awards in dollars	(Stephen R. Porter & Umbach, 2001)
Research publication and citation rates	(S. R. Porter & Toutkoushian, 2006) (Brooks, 2005) (Toutkoushian, Porter, Danielson, & Hollis, 2003) (Stephen R. Porter & Umbach, 2001) (Fox, 1992) (Baird, 1991) (Bentley & Blackburn, 1990)
Proportion of faculty receiving grants	(Dundar & Lewis, 1998) (Bentley & Blackburn, 1990)

Indicators of Quality

The measures of greatest difficulty are those of quality. Brooks identifies several variables by which to measure quality but concludes that past research has been lacking. Either an understanding of quality was assumed or variables of convenience were used to de facto define quality as measured (Brooks, 2005). The best indicator of program quality is some measure of student outcomes, such as progression to graduate programs or job placements. National data sets do not exist to report and measure this information. Nevertheless, the field has narrowed to a handful of accepted or at least popularly used measures provided in *Table 2.4*.

Table 2.4. Performance Indicators of Quality.

Quality Indicator	Literature Sources
Student retention	(N. W. Hillman et al., 2014) (Powell et al., 2012) (Burke & Minassians, 2002)
SAT/ACT scores and class rankings	(S. R. Porter & Toutkoushian, 2006) (Brooks, 2005)
Student-faculty ratios	(National Research Council, 2012)
Personnel compensation as a percentage of total expenditures	(N. W. Hillman et al., 2014)
Student satisfaction surveys	(Brooks, 2005)

Student retention is a commonly used indicator of quality as it indicates academic progression and presumably a satisfactory experience since students returned for more. SAT/ACT scores and class rankings are a good indicator of the academic quality of the student body and also illustrate the selectivity of the school. Presumably schools that can

attract the highest achieving students can be considered a high quality institution since those students have the greatest range of choices. SAT/ACT scores also have a strong correlation with popular rankings such as those published by U.S. News and World Report (National Research Council, 2012).

While considerable literature is available on the measure of various institutional performance indicators, little research has been done on specific interventions to improve institutional performance or their efficacy. Portfolio management is one such intervention, along with its academic cousin program prioritization. In the next sections I review the literature on these two practices.

Economic and Organizational Portfolio Theories

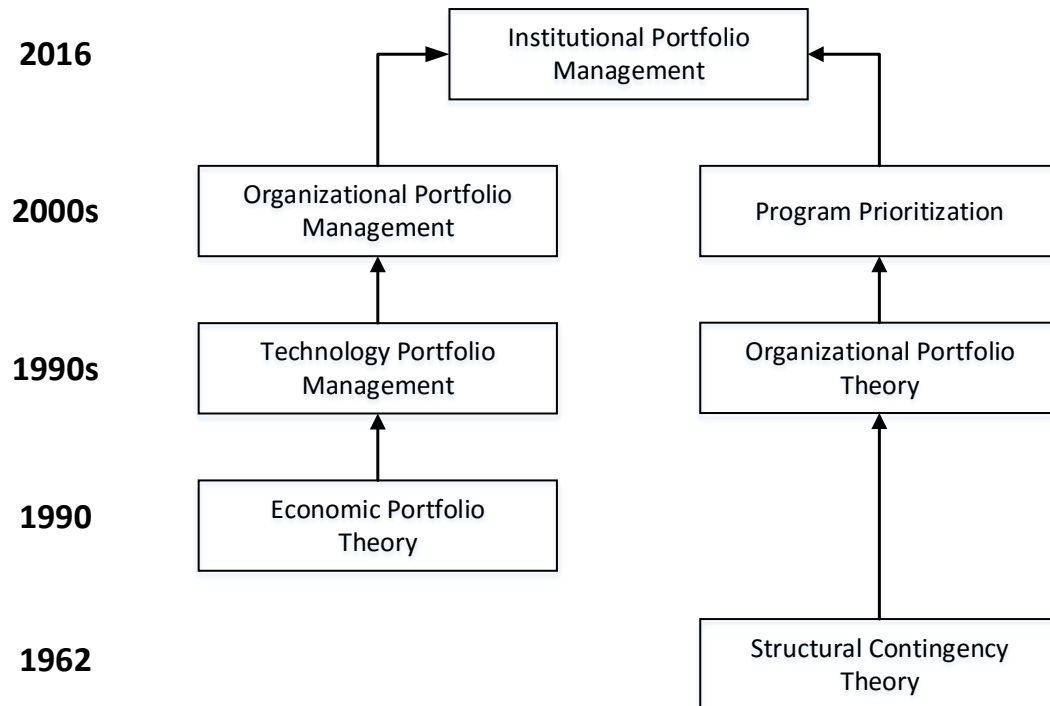
Both program prioritization in higher education and portfolio management in the private sector are the offspring of economic portfolio theory largely developed by Harry Markowitz, for which he received the Nobel prize in economics (Markowitz, 1990). In that context it refers to the management of a portfolio of financial assets, such as stocks and bonds. The fundamental principle of economic portfolio theory is that, as the Merchant did, investors diversify their holdings to reduce the risk of uncertainty. As Markowitz points out, if uncertainty did not exist, an investor would only invest in the opportunity of highest return. Had the Merchant known which ship would be lost at sea he would not have put any cargo on it to begin with. Since uncertainty does exist, investors entrust their resources to more than one ship's bottom to offset the risks. They do so by selecting investments, evaluating their risk and return, and allocating funds to maximize the return and minimize the risk in accordance with investor objectives for

growth and safe harbor. Similarly, a corporation diversifies its product and service lines, either to offset the risk of uncertainty, or to create synergies, when, for example, the know-how of one process supports another.

Economic portfolio theory originated as principles to guide financial investment portfolios but the principles have been transferred to other applications and industries. Following the Nobel prize award in 1990, private sector organizations, especially in the field of information technology, began applying portfolio theory to the management of their internal projects and programs in diverse fields including commercial corporations (Donaldson, 2000), global non-profits (Miljkovic, 2006), the biopharmaceutical industry (Reginato, 2005), and information technology (Kumar et al., 2008; Project Management Institute, 2008). Since its early adoption by information technology organizations in the 1990's, (Project Management Institute, 2008), success of this approach is evidenced in the growing field of portfolio management now gaining a foothold in professional organizations such as ISACA and the Project Management Institute, even evolving to a formal standard (ISACA, 2012; Project Management Institute, 2008).

Figure 2.2 traces the linkages from portfolio management and program prioritization back to portfolio theory and structural contingency theory. As evidenced in the diagram, portfolio management and program prioritization evolved in parallel tracks, unbeknownst to each other. After discussing the evolution of the parallel practices, I shall examine the different collections of literature specific to each.

Figure 2.2. Theoretical Evolution of Founding Theories.



The first theoretical evolutionary advancement from the foundation of economic portfolio theory is the development of technology portfolio management and organizational portfolio theory in the 1990s. On the technology portfolio management side, information technology organizations (IT), usually embedded within larger corporations, realized the need to manage the risk and return of technology investments, and the discipline of project portfolio management was born (Project Management Institute, 2008; Rad & Levin, 2006; Reginato, 2005). On the organizational portfolio theory side, Lex Donaldson applied portfolio theory to organizations, positing that organizations themselves are a collection of investments, affected by internal and external forces that drive change (Donaldson, 2000; Miljkovic, 2006). While Donaldson applied this theory in the private sector, Dragan Miljkovic applied the same theory to

international not-for-profit organizations: the World Bank, International Monetary Fund, and World Trade Organization (Miljkovic, 2006).

The second theoretical evolutionary advancement is the practice of organizational portfolio management and the practice of program prioritization in the 2000s, when the practices converge. Organizational portfolio management is distinct from both technology portfolio management and organizational portfolio theory of the 1990s, although related to both. In both cases, however, the practitioners were likely unaware that the practices they were wielding are the manifestation of portfolio theory. Where *technology* portfolio management is the application of portfolio theory to a collection of IT projects, or resource investments of time and money, *organizational* portfolio management is the application of portfolio theory to the project investments of the entire organization, technology or not (Hossenlopp, 2010). And where organizational portfolio *theory* is the application of portfolio theory to the organization as a whole, it is looking at the organization as a portfolio, which can interactively adapt to environmental changes as if it is a portfolio of investments (Donaldson, 2000). It is not looking at the projects of the organization as the portfolio, but the organization itself.

The difference between program prioritization and its predecessors is similarly nuanced. Where organizational portfolio theory is the, perhaps accidental, application of portfolio theory to the resource collection of private sector organizations, program prioritization is the, perhaps accidental, application of portfolio theory to higher education organizations. Program prioritization views all of the time-and-effort investments of an institution of higher education as a collection of investments that must be evaluated, selected, and prioritized by allocating funds in accordance with

institutional, regional, and state objectives for growth and preservation (Dickeson, 2010). And where organizational portfolio management looks at the resource allocation of the organization as a portfolio of investments, it is looking at the projects of private-sector organizations, not the programs of higher-education organizations.

Although known by different terms, the comparison of the corporate practice of portfolio management and the higher education practice of program prioritization illustrates that both practices utilize similar principles and techniques, customized to the characteristics of the individual organization. Both practices rely on elements such as: a) governance of the portfolio and prioritization process by a group of stakeholders; b) predefined criteria to evaluate, select, and prioritize programs within the portfolio; c) use of criteria that address cost, risk, and alignment to mission objectives; and d) adaptation of common practices to the culture and characteristics of the organization (Cope & Delaney, 1991; Dickeson, 2010; Harper, 2013; Project Management Institute, 2008; Rad & Levin, 2006). This collection of literature and examples is based on the fundamental theory underlying portfolio management: that management of organizational resources constitutes a portfolio of investments, which can be optimized to achieve strategic objectives more effectively and efficiently if it is intentionally managed to that end.

Combining the best of these practices creates institutional portfolio management, which this dissertation proposes as a framework of integrated planning that can mitigate the cycle of mission fragmentation and program prioritization in higher education. It provides a new navigation system by which institutions can chart their course through changing winds of public expectations.

Portfolio Management Literature

The principles of portfolio management focus on the selection of assets based on a desired balance of risk and return, no matter what the collection of assets is. Portfolio management can be described as the operationalization of business strategy, where an organization invests and optimizes its resources to deliver its strategic objectives, maximizing the return on the investment in balance against the risks. The practice involves considering all possible investments in new or existing programs, i.e. products or services, that could consume organizational resources such as personnel time and effort, facilities space, or financial funds. The practice is to then evaluate and select the correct level of investment in the correct mix of programs to best achieve strategic objectives.

Institutions of higher education also have a portfolio of offerings in lines of teaching, research, and service. Because higher education is a public good serving society's interests, the programs of that portfolio are driven by public demand and responsibility. In that sense the portfolio is already diversified, and not by strategic choice. It is still within the power of the institution to manage the diversification and the alignment of resources among programs to offset the uncertainties of changing public demands, among others.

While not as common in the higher education sector, some institutions are likewise re-evaluating their portfolio of academic and administrative programs in an effort to improve institutional performance or establish competitive advantage, and some scholars have addressed portfolio management in a higher education setting.

Examples of portfolio management in the higher education arena include a 2013 article in *Planning for Higher Education* describing the use of portfolio management techniques to optimize an institution's strategic allocation of funds to academic programs using demand, contribution margin, and service as criteria (Harper, 2013), which correspond to the common portfolio criteria of cost and risk (Project Management Institute, 2008). Similarly, a 2010 article in *Facilities Manager* explicitly describes the use of portfolio management to optimize investment in real property development and maintenance, using the criteria risk, mission criticality, and credit-hour production as the criteria (Daigneau, 2010). Likewise, Cope and Delaney (1991) describe the use of portfolio management, although not explicitly referred to as such, to realize strategic objectives in higher education institutions, where they discuss a market-oriented strategy applied to program review. A market-oriented strategy in effect evaluates programs in accordance with market demands and therefore prioritizes them according to centrality of a market-oriented strategy. This is the essence of portfolio management: aligning investments with objectives. In these examples, we see early and oblique introductions of portfolio management into higher education literature.

Program Prioritization Literature

Contextual literature around program prioritization exists in the private-sector, where it is known as portfolio management, with some application of it in the higher education sector, as seen in the previous section. In this section I describe the literature more explicitly about program prioritization, organized in chronological categories.

Early Program Prioritization Literature

The historical foundation of program prioritization was inductively reasoned from literature that did not explicitly refer to it as such. The concept of program prioritization begins to take shape more explicitly in the 1970's with an article by Shirley and Volkwein. The authors note that market forces such as declining population and declining financial support have forced the need for program priority setting. The article proposes a process and criteria for developing a campus plan of program offerings and priorities (Shirley & Volkwein, 1978).

Patricia Gumport contributed to the subject in 1993 with an examination of academic program reduction by two public research universities in response to reductions in state appropriations. Gumport's case studies give readers an insight into the mechanics employed by the individual actors of these universities, such as executive administrators, subordinate administrators, faculty researchers, and other faculty involved, as they struggled with the challenges they faced. While not intended to be conclusive, Gumport notes that external constituencies have "gained prominence in academic decision making" (p. 286). This indicates a shift in strategic alignment from social good to market influence (Gumport, 1993). Gumport also notes that institutions are driven to prioritize programs when resources become scarce. Facing competing demands to both maintain traditional programs and add new programs in response to changing market forces is no longer an option when budgets must be cut. Gumport cautions against the use of prioritization at the detriment of the social contract between higher education as an enduring institution and the society it serves (Gumport, 2005).

Elaine El-Khawas furthered the conversation in 1994 with her article on restructuring initiatives in higher education. She notes that doctoral-granting and research institutions are using multiple strategies in response to fiscal constraints, among them, changes in academic programs. The institutions also employed the more traditional strategies of across-the-board expenditure control and increasing the sources of revenue. In her study, she found that institutional characteristics played a role in the selection of strategies employed. Doctorate-granting and research universities were more likely to use a collection of strategies to address the fiscal constraints, where comprehensive institutions and community colleges used a narrower array of strategies (El-Khawas, 1994).

Barak and Sweeney (1995) evaluated the use of program review as an integral piece of the planning and budgeting process on campuses. The authors summarize literature that notes the desirability of incorporating program review and outcomes assessment into strategic planning to define institutional mission, priorities, and strategic objectives but stop short of calling for prioritization of programs. Their study quantifies the institutions that incorporate program review into planning, budgeting and assessment, finding that of the 452 institutions in the sample, 83% conducted systematic review but the majority did so to improve program quality and did not find it particularly effective in guiding their planning.

Contemporary Program Prioritization Literature

Beginning around the turn of the century, literature emerges that more explicitly looks at the selection of academic programs relative to the institutional mission and

strategies. Patricia Gumport (2000) summarizes the trends affecting institutions of higher education that drive the shift from a social orientation to a market orientation. Gumport notes the professionalization of academic administrators as “managers who diagnose and prescribe organizational well-being” (p. 76) and suggests that managers are driven to allocate resources and restructure academic programs in response to market demands and organizational constraints. Without explicitly describing program prioritization, this article indicates a shift toward intentional management of resources in alignment with strategic objectives that shape the academic program offerings of an institution.

In 1999, and later updated in 2010, Robert C. Dickeson, former college president and co-founder of the Lumina Foundation, published the first work explicitly advocating for and describing the practice of program prioritization. The monograph presents a case for the need to strategically and intentionally allocate resources across all programs of an institution, both academic and administrative, to align limited resources with mission objectives and reduce the fragmentation associated with program proliferation. Where Gumport in 2000 decries the shift from social institution to industrial organization that intentional management and alignment represents, Dickeson advocates that practice as a necessity, good or bad, in response to the climate of fiscal constraints and public expectations. His seminal work presents the case and also carefully prescribes recommended practices and process to follow to assure a greater probability of success as well as practices to avoid. While well-grounded in literature, Dickeson does not present any empirical evidence to support the efficacy of program prioritization in improving institutional outcomes (Dickeson, 2010). Dickeson’s model has gained a following of

institutions driven either by crisis or an interest in gaining a competitive advantage, where the objective is the need to improve and demonstrate institutional performance.

Peter D. Eckel in 2002, citing Dickeson's work, published a study on four prominent research institutions that had recently closed academic programs to determine the decision rules and process they used. Three of the four institutions developed formal criteria to use, similar to those proposed by Dickeson. The common core of criteria were mission centrality (i.e. strategic alignment), quality (measured by reputation and the quality of faculty and graduate students), and cost. Other criteria included contribution to the region and demand for the program, confirming a market orientation influence. Eckel found that programs with weak leadership, few students, few faculty, and lacking centrality to the mission were most likely to be closed and that regardless of the criteria or process, most participants interviewed felt the closure selections held no surprises and were predictable by most faculty (Eckel, 2002). This study evaluates only one outcome of program prioritization—program closure—it does not include other potential outcomes such as program augmentation or sustainment.

Another study conducted around program prioritization is that of Susan Deer in 2006. Deer conducted a Delphi study of the use of a shared governance model of decision making around program prioritization at the community college level. The purpose of the study was to evaluate the inclusive decision-making model of shared governance at the community college level that is more accustomed to top-down decision making. Program prioritization as a controversial decision exercise provided an opportunity to test and evaluate the decision making model (Deer, 2006). The study provides insight into the efficacy of the participatory process described by Dickeson in a culture that is largely

unaccustomed to such a model. However, it does not provide empirical evidence as to the efficacy of the outcomes of the prioritization.

Program Prioritization and Institutional Characteristics

Literature supports that there is a relationship between institutional characteristics and differential adaptive responses to changing sector forces. In her 1994 study, Elaine El-Khawas investigated adaptive changes including program selectivity among four categories of institutions: community colleges, comprehensive universities and colleges, doctorate-granting universities, and research universities based on an ACE College Trends survey. Of 296 public institutions polled, over two-thirds were redistributing operations funds in response to changes in state appropriations, including consideration of realigning academic programs. However, among the 1987 Carnegie Classifications used in the study, research universities were significantly more likely to reduce, eliminate, or augment academic programs as a strategy than other types of institutions, at a ratio of 35% for research universities compared to 23% for doctorate-granting universities, 15% for comprehensive colleges and universities, and 17% for community colleges. El-Khawas suggests that institutional size may be a factor, where larger institutions have a wider array of programs (an example of mission fragmentation) and can more easily reduce programs without affecting core academics than can smaller institutions with more focused curricula (El-Khawas, 1994).

Other studies also support institutional characteristics as predictors of a potential adaptive program prioritization response. In 1973 Blau found that institutional size correlates with academic specialization into new fields (Blau, 1973) which would

contribute to a wide distribution of resources (mission fragmentation) and the potential need to optimize the portfolio in response (program prioritization). And more recently in 2010, Michael Middaugh found that “80% of the variation in instructional costs across four-year institutions in the United States... is explained by the mix of disciplines that make up the academic curriculum” (Middaugh, 2010, p. 111). A broader mix of disciplines in the public research and doctoral institutions would lead those institutional types toward a cycle of expanding mission fragmentation followed by a retrenchment of program prioritization. This is a conclusion supported by a study I conducted and published in 2015, also included as a manuscript of this dissertation, which found a correlation between institutional characteristics and the use of program prioritization to align resources (Milkovich, 2015). Studies of adaptive responses among community colleges illustrate that they are more responsive to changing societal and workforce needs but that too much fragmentation of resources impacts their effectiveness in delivering on an increasingly diverse mission (T. R. Bailey & Averianova, 1998; Gumport, 2003). And finally, religious-affiliated institutions might well have an advantage in maintaining mission focus as suggested by Bailey and Averianova (1998) in referencing the work of Bryk, Lee and Holland (Bryk, Lee, & Holland, 1993). All of these studies support the influence of institutional characteristics on mission fragmentation and differential responses to program prioritization, but with little empirical evidence indicating which types are more likely to respond to changing sector-level forces specifically with the adoption of program prioritization.

The body of literature on program prioritization gradually builds from early descriptions of intentional management of higher education institutional program

offerings, to explicit recommendations on the need for and practice of program prioritization. A very few number of studies look at narrow aspects of program prioritization, including Deer's study of shared decision making in the process at community colleges and Eckel's study of program closure criteria at research institutions. Other studies, such as the manuscript in Chapter Four, look at an association of institutional characteristics with program prioritization.

Chapter Summary

In this chapter I reviewed a comprehensive selection of literature with structural contingency theory as the central paradigm. The literature reviewed supports the application of structural contingency theory in higher education by grounding it in accepted, scholarly extent literature. Structural contingency theory explains the cycle of mission fragmentation and program prioritization that has dogged the performance of higher education over the last few hundred years. The literature explains the rocky shoals of sector and institutional context that leaders must navigate. This literature review also sets the stage for the manuscripts on the subject that have been published, accepted, or submitted to peer-reviewed professional conference and peer-reviewed journals. Through the literature reviewed and the manuscripts presented, I continue to call for a dramatic sea change in the way institutional strategies are charted and fulfilled. The Merchant did not have public scrutiny on his investment strategies, but we in higher education do. It is imperative that we chart a new course of intentional, institutional, portfolio management.

CHAPTER THREE

PILOT STUDY: ACADEMIC PROGRAM PRIORITIZATION AMONG
INSTITUTIONS OF HIGHER EDUCATIONIntroduction

The changing context of higher education is creating a perfect storm of conditions that could compel institutions of higher education (IHEs) to transform more dramatically than seen in history in order to adapt to and survive the industry paradigm shift. Echoing Darwin's theory that animals best fitted to their environment are those most likely to survive, organizations best adapted to their industry are likewise those most likely to survive. Adapting to a changed environment or industry requires an evolutionary or organizational transformation, or *adaptive change*. In the current industry paradigm shift, many IHEs are undergoing adaptive change by restructuring their portfolio of academic programs in an effort to remain competitive and cost-effective in an effort to survive. Academic program prioritization therefore serves as an example of adaptive change in higher education. Understanding the drivers of academic program prioritization and the more or less successful approaches can help the industry of higher education respond with greater agility to changing conditions, without compromising academic integrity.

Gumport (2007) illustrates that while higher education has faced changing industry forces in the past, the current climate is the first time that all five of the recognized industry forces known as "Porter's Five Forces" are changing simultaneously: supplier power, threat of substitutes, threat of new entrants, buyer power, and competitive

rivalry. The changes in industry forces manifest for higher education as: a) society shifting toward a view of higher education as an individual benefit rather than a social good, believing the expense should be borne by the individual and not the state; b) state budgets in fiscal crisis in conjunction with the economic downturn; c) legislatures less inclined to fund IHEs as a result of social pressures and less able to fund IHEs as a result of fiscal pressures, d) for-profit institutions increasing in number and competitiveness, e) enrollments rising, adding increased pressure on institutional infrastructure; f) the student demographic shifting away from the traditional post high-school 4-year experience to a profile of older working adults or more transient students who stop and start or come and go among schools; g) distance education breaking down geographic boundaries and expanding the competitor base from which students can select an institution. (Birnbaum, 1988; Duderstadt & Womack, 2003; Eckel, 2002)

This is the perfect storm for change in higher education. Organizations intent on thriving in the new conditions will need to undertake adaptive change, such as academic program prioritization.

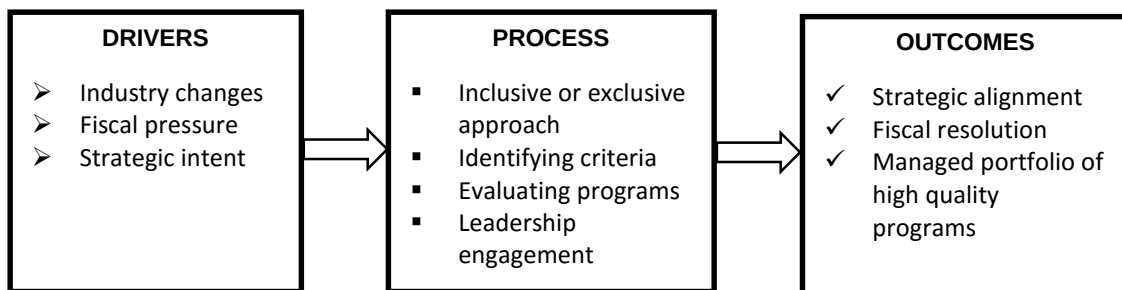
Purpose of the Study

The purpose of this study is to discover patterns among institutions that have undertaken adaptive change in the form of academic program prioritization. What drivers toward adaptive change did they have in common? What approaches did they use and what were the outcomes? What predictions can be made for institutions considering or beginning academic program prioritization?

Theoretical Framework and Related Literature

The theoretical framework for this study derives from the work of Robert C. Dickeson (1999, 2010). Dickeson introduces the need for academic program prioritization as a response to changing industry forces and proposes a process for successful outcomes. Changing industry forces often create fiscal pressure and also create opportunity to align program resources to institutional strategy for greater long-term success. After working with hundreds of institutions, Dickeson also posits that the process used to prioritize academic programs influences the success or failure of the outcomes. A transparent and inclusive approach with predetermined criteria and comprehensive program evaluation is more likely to result in successful outcomes of a strategically aligned portfolio of programs operating with a high caliber of quality within the fiscal constraints of the institution.

Figure 3.1. Theoretical Framework Model.



The works of Lex Donaldson of the University of New South Wales Australian School of Business and Dragan Miljkovic of North Dakota State University in organizational portfolio theory contributes to this framework. Donaldson (2000) has

proposed an organizational portfolio theory of internal and external change drivers that operates similarly to a financial portfolio of balanced risk factors. Certain factors prompt change and certain factors deter change. The interaction of the factors creates a balance or imbalance of risk that results in adaptive change or stasis. Donaldson's work and theory applied explicitly to private-sector corporations. Miljkovic (2006) applied organizational portfolio theory to public-sector organizations, specifically international not-for-profits. In this public-sector application, different factors were identified as comprising the change driver portfolio from the portfolio identified by Donaldson for private-sector corporations.

In related literature, Deanna de Zilwa of the University of Melbourne studied adaptive change responses among IHEs in Australia; however, her work focuses on internal cultural factors and their relationship to adaptive change responses rather than a portfolio of change factors (de Zilwa, 2007).

According to database searches and the author's correspondence with Dickeson (personal communication January 5, 2012) and Donaldson (personal communication, February 1, 2012) no research has been conducted applying organizational portfolio theory to the higher-education sector and no research has been conducted evaluating the different approaches and results of academic program prioritization, from which to possibly draw correlations or conclusions regarding better or worse practices.

Additional areas of study are identifiable among the available literature: studies of the types of adaptive changes undertaken by different categories of IHEs and studies of the methods of program restructuring and prioritization used by IHEs.

In the first category, a study by Elaine El-Khawas in 1994 summarized adaptive changes including program selectivity among four categories of IHE: community colleges, comprehensive universities and colleges, doctorate-granting universities, and research universities based on an ACE College Trends survey. (El-Khawas, 1994).

Patricia Gumport also studied adaptive responses among the traditionally more responsive community college institutions (Gumport, 2003).

In the second category, methods of decision-making within academic program prioritization efforts have been proposed and studied by several authors including Peter Eckel and Patricia Gumport, using different approaches. Eckel studied an economic decision making approach (Eckel, 2002); Gumport studied the more cultural and sociological factors involved in academic retrenchment and program reduction and their long-term impacts on knowledge (Gumport, 1993, 2000, 2005).

Guiding Hypotheses

Donaldson's Organizational Portfolio Theory (Donaldson, 2000) states that a common set of change drivers interact as a portfolio, similar to a portfolio of financial risk and reward, offsetting or reinforcing each other to inhibit or trigger adaptive risk responses among private sector corporations. Guiding hypotheses related to portfolio theory include:

1. A portfolio of change drivers will exist for IHEs; however, the balance of factors that inhibit or trigger adaptive risk responses will be different from private sector.

2. The identified change drivers will demonstrate a portfolio effect: some drivers alone may directly trigger adaptive change while some drivers will be contingent on other factors.

Guiding hypotheses related to approaches and outcomes include:

3. A correlation will be found between approaches and outcomes that will indicate more successful approaches for other IHEs to learn from.
4. Institutional characteristics will influence approaches and outcomes and their correlations.

Significance

This research contributes to the body of knowledge surrounding academic program prioritization by increasing IHEs' understanding of the process, approaches, best practices, and correlated results. Validating the approach espoused by Dickeson provides a scholarly basis for adopting those methods as a best practice to guide IHEs through the challenging activity of academic program prioritization. Further research will need to be conducted on a broader scale within academic program prioritization, as well as in the arena of understanding the common characteristics among IHEs that drive them toward adaptive change.

Methods

This research project was an initial pilot study to identify general patterns of the factors driving institutions to undertake academic program prioritization as well as

characteristics of their approach and results. From this pilot, the research questions and hypotheses will be refined for future study.

As the purpose of this pilot study was to cast a wide net to capture any possible change driver or approach characteristic that might prove common among multiple subjects, qualitative interviews were used as the primary instrument. The questions were general and open-ended, resulting in a wide and rich array of data that was subsequently narrowed down into themes.

Participants

Participants of this study were a selection of 20 institutions including large public research institutions, small privates, community colleges and religious institutions whose leaders are exploring, working on, or have completed academic program prioritization.

The participants were located from three sources:

- Attendees at a workshop who were considering academic program prioritization were solicited by the researcher and volunteered for the study.
- Names of institutional leaders who had completed the effort were provided by Robert C. Dickeson, an academic program prioritization author-expert, and were contacted by the researcher to participate in the study.
- Institutions who had published the process and results of their academic program prioritization were located via Google search and solicited by the researcher to participate in the study.

A total of 40 prospective institutions were identified. Of the institutions that had completed academic program prioritization, many of the leaders responsible for the

undertaking had retired or were not locatable. Those prospective participants were eliminated from the list. Of the 26 potential participants subsequently approached by the researcher via email or phone, 20 participated over the course of four weeks. Participants included large public research institutions, small privates, community colleges and religious institutions in North America. Institutional identifying information was masked to preserve anonymity. Summaries of results were offered to the subjects in exchange for their participation.

Given that institutions of varying size and type were interested in or pursuing academic program prioritization, it was assumed for this study that size and type were not significant factors driving the need to prioritize. Future research will investigate this assumption.

Institutional representatives interviewed included 2 Presidents; 8 Provosts or comparable title, e.g. Vice President of Academic Affairs; 4 Vice Presidents or comparable title, e.g. Chief of Staff; 3 Associate Provosts or Associate Vice Presidents; and 3 Deans or Associate Deans. In all cases the representatives interviewed were responsible for, or integrally involved in a team responsible for, academic program prioritization at their institution.

Procedure

Prospective institutions were assigned a number as they were located, resulting in random numbering as they were subsequently weeded out. As institutions identified the stage they were at, the number was prepended to identify them as having completed

academic program prioritization (COM_), exploring, (EXP_) or a work in progress (WIP_).

After establishing connections with the subjects, 30-minute telephone interviews were conducted using a pre-established set of open-ended questions. The questions addressed 6 general topics that could be contributing factors to the need for and approach to academic program prioritization: drivers, approach, culture, obstacles, results, sustainability. For each general topic a set of conversational prompts were developed to flesh out details for that topic. In this manner participants were free to suggest any characteristics related to the topic that they considered significant for their institution but were also prompted to consider characteristics other institutions mentioned in order to develop some consistency in responses among the participants. The same topics were used throughout the interviewing process; however, after the first couple of interviews the prompts and grouping of the questions were adjusted to better fit the natural flow of the conversations. Approximately half of the interviews were recorded to spot-check note-taking, which proved reasonably accurate. The questions and prompts were put into a note-taking template used to capture descriptive and reflective notes for each interview. Interview notes were reviewed and summarized in keywords in the reflective notes section of the template.

Keywords used by the subjects in the interviews were listed in tables for an overview. Variables were defined for similar qualitative keywords. For example, the variable “board strength” was used to aggregate different interview keywords related to a governing board’s influence, e.g. “strong board,” “weak board,” “distant hands-off board.” Variables were then aggregated into themes related to the research questions

(drivers of and approaches to academic program prioritization) and more specific interview topics (drivers, culture, approach, obstacles, results, sustainability). Variables were then grouped into themes. A single *change drivers* theme summarized information on the drivers that led institutions to undertake academic program prioritization. Other variables that were reflective of the process or institutional characteristics were grouped into non-driver themes. Through this iterative aggregation process eight final themes emerged, listed and defined below:

- | | |
|----------------------|----------------------------|
| ▪ Change driver | ▪ Institutional culture |
| ▪ Strategic approach | ▪ Institutional resistance |
| ▪ Process openness | ▪ Board engagement |
| ▪ Process framework | ▪ Leadership engagement |

The themes were operationalized as:

- *Board engagement*: Aggregation of the board-related variables into a single theme and institutional rating of High, Medium or Low.
- *Change driver*: A factor compelling an institution to undertake an internal, perhaps dramatic, adaptive change such as academic program prioritization. Examples of change drivers in this study include a desire to achieve a quality benchmark or a fiscal crisis.
- *Institutional culture*: Theme aggregating the variables of shared governance, internal trust, and unionization.
- *Institutional resistance*: Theme aggregating the variables of faculty resistance, staff resistance, student resistance, and leadership resistance.

Indicates the extent to which the institution faces strong opposition to prioritization.

- *Leadership engagement*: Theme indicating the style or strength of institutional executive leadership (CEO, VPs) with a rating of Strong, Medium, or Weak.
- *Process framework*: Aggregation of the variables referring to how program prioritization was approached, which are data usage, criteria usage, rubric use, categorization, and model.
- *Process openness*: Theme aggregating the variables of academic only, admin/auxiliary, transparency, engagement, developed process, web publishing, and structure. Indicates how broadly and deeply all levels and units of the institution were involved in conducting prioritization as well as having their programs and services included in the prioritization decision-making.
- *Strategic approach*: Theme aggregating the variables goal, dollar target, augmentation, redirect funds, funding source, and ongoing/onetime with a rating of Low, Medium, High.

Data Analysis

The variables of the change driver theme were aggregated into terms hereafter referred to as *change drivers*. Change drivers could be ordered from least to most strategic, as listed in *Table 3.1*. Least strategic are defined as those that forced an institution into change without regard to strategic intent. Most strategic are those that an

institution consciously chose, recognizing a competitive advantage. For example, a fiscal crisis was not a conscious strategic choice of the institution. An intent to improve quality as a competitive advantage was a strategic choice.

Table 3.1. Change Drivers and Variables.

Change Drivers	Variables
Fiscal	Fiscal Crisis
Fiscal	Budget Pressure
Environ	Enrollment Decline
Environ	Legislative Pressure
Environ	Accreditation
Strategic	Mission Deficient
Strategic	Increased Revenue
Strategic	Enrollment Growth
Strategic	Strategic Planning
Strategic	Quality Improvement

Levels of least to most strategic were developed and defined as defined below and illustrated in *Table 3.2*.

- Level 1: The institution is purely crisis and dollars driven, reacting to fiscal pressure.
- Level 2: The institution is reacting to fiscal pressure as well as responding to environmental pressures, such as legislative or accreditation influence. It is still in reactive mode but has reasons other than purely fiscal.

- Level 3: The institution is reacting to fiscal pressure, responding to environmental changes and recognizing strategic reasons. As fiscal and environmental drivers are both forms of pressure to change, the institution is citing more reactive reasons to prioritize than strategic.
- Level 4: The institution is realizing strategic value to prioritization in addition to reacting to fiscal pressure. There are fewer pressure reasons to prioritize therefore a greater percentage of strategic reasons compared to Level 2.
- Level 5: The institution is recognizing and responding to environmental changes, without fiscal pressure, but also without strategic goals. While responding to environmental changes is still somewhat reactive, the lack of fiscal pressure indicates proactive outward-looking responsiveness similar to strategic drivers.
- Level 6: The institution is recognizing and responding to environmental pressures while also recognizing strategic value.
- Level 7: The institution is purely strategy-driven, using prioritization as a means to accomplish strategic goals.

In this manner, every possible combination of change driver variables was ranked from least to most strategic and institutions could be assessed on that basis. Non-driver keywords and variables were more varied and numerous, lending themselves to more subjective interpretation.

Table 3.2. Change Drivers Strategic Scale.

Strategic Level	Driver Combinations
1	Fiscal only
2	Fiscal/Environ
3	Fiscal/Environ/Strategic
4	Fiscal/Strategic
5	Environ only
6	Environ/Strategic
7	Strategic only

Three themes were identified as having insufficient information to be useable and were removed from further analysis: Legislature Involvement, Shared Urgency, and Obstacles. *Tables 3.3–3.6* show the remaining non-driver themes and variables.

Table 3.3. Engagement Themes and Variables.

Leadership Engagement	Board Engagement
Leadership	Board strength Board selection Board support

Table 3.4. Approach Themes and Variables.

Strategic Approach	Sustained/Ongoing
Goal	Ongoing
Dollar target	Onetime
Augmentation	
Redirect funds	
Funding source	

Table 3.5. Process Themes and Variables

Process Openness	Process Framework
Academic only	Data usage
Administration/Auxiliary	Criteria usage
Transparency	Rubric usage
Engagement	Categorization
Developed process	Model
Web publishing	
Structure	

Table 3.6. Institutional Themes and Variables

Institutional Culture	Institutional Resistance
Shared governance	Faculty
Internal trust	Staff
Unionization	Student
	Leadership

Institutions were then rated on each non-driver theme using a general tri-level assessment, such as High/Neutral/Low, to avoid any illusion of precision in assessing and comparing these more subjective characteristics.

Results emerged for those institutions that had completed academic program prioritization and could describe the outcomes. Results varied widely across institutions and were not readily quantifiable; however, there were clear differences in success and failure across institutions. Institutional results could be ranked on a sliding scale from most to least successful based on definitions of success that most people familiar with higher education would probably consider reasonable. For example, a faculty vote of no-

confidence would reasonably be considered an unsuccessful outcome by most people familiar with the industry of higher education while the ability to launch new fulltime tenure-track faculty lines, attract grants, and improve student retention would reasonably be considered successful outcomes. *Table 3.7* illustrates the scale used with examples from institutional keywords.

Table 3.7. Sliding Scale of Results with Keywords

Scale	Example
<i>Very High Success = 7</i>	
Very high investment	New school
High investment	New FTT faculty lines
Reinvestment	New programs
Improvement	Improved metrics
Gained funds	New contribution model
Met required cuts	Reduce enough cost
Conserved funds	Reduce some cost
Learned something	Gain something out of it
Failed to meet cuts	Gain less than needed
Didn't know outcome	Unknown results
Vote of no confidence	Vote of no confidence
<i>Very Low Success = 1</i>	

With a success scale defined for results, institutions could then be assessed according to how successful their efforts were. Non-driver themes were only generally assessed because there was no reasonable way to quantify the results of such generalized and qualitative themes. Results, however, lent themselves to a slightly more analytical method. With 7 institutions and a reasonably defined scale, institutions could be

compared on a pair-wise basis and ranked in order from most successful (7) to least successful (1). Ranking completed institutions was a simple, clear, doable method to distinguish results for use in predictions for other institutions.

With institutional ratings for each of the eight themes and a ranking of results for those that had completed academic program prioritization, correlations could be drawn between the themes and the results and predictions could be made for those institutions still in earlier stages.

Researcher's Role

The role of the researcher in this study involved establishing trusted relationships with the leadership of the participating institutions. Access to the institutions was gained through email and telephone introductions. Several institutions expressed concern that identifying information be masked, or spoke only on condition of anonymity. Several institutions expressed interest in receiving the results of the study also as a condition of participation. All participants whose interviews were recorded granted permission to record; one institution granted permission only after assurance that the recording would be kept secure.

Research Methods Refinement

As a pilot study, lessons learned from this research will be applied to future research to improve and refine knowledge gained. Following are identified refinements for follow-up studies:

- Record all interviews. Although spot-checking a large proportion of the interviews proved the note taking reliable, recordings were beneficial and a more thorough approach for the future.
- Refine the question set. The use of open-ended questions worked as expected to gather any possible characteristic or driver rather than assuming characteristics and drivers. As interviews progressed and themes emerged, gaps also emerged that should be filled with more structured questions, while some questions proved less fruitful than expected and could be eliminated.
- Control the interviews more tightly. Some interviewees tended to focus on a particular topic and expound at length. Now that structured questions are presentable, guiding the interview more tightly, but still politely, will reduce gaps. Some practice may be required to hone techniques for tactfully moving interviews forward.
- Develop a questionnaire that can be used to follow up with the current participating institutions to fill in gaps without requiring them to participate in another interview.
- Gather more empirical data. This study gathered leadership perspectives on the drivers, characteristics, and results of program prioritization. Finding artifacts and evidence to support their perspectives will strengthen the conclusions. For example, researching board records to assess level of engagement could be more reliable evidence than an individual's assessment of the board's level of engagement.

Results

The change drivers cited by institutions as shown in *Table 3.8* and *Table 3.9* answer the research question “What drivers toward adaptive change did [institutions] have in common?” Sixty percent (12 out of 20) cited strategic planning as a change driver toward prioritization, with 50% citing budget pressure and 45% citing an intended quality improvement. *Figure 3.2* illustrates the distribution of institutions across the change drivers: 25% cited purely strategic reasons; 30% cited a combination of strategic, environmental, and fiscal reasons; 10% cited purely fiscal reasons; and a 70% majority cited some degree of fiscal pressure.

Figure 3.2. Distribution of IHEs Across Change Drivers.

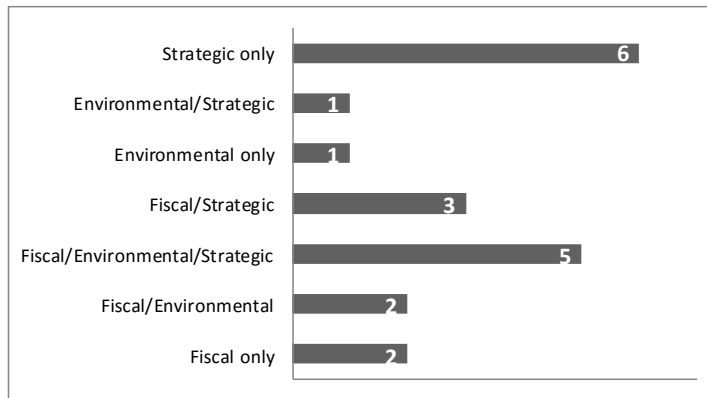


Table 3.10 shows the change drivers theme with the institutional scores based on the defined Levels 1 through 7 or least to most strategic. Of the completed institutions that cited strategic drivers, COM_34, COM_35, and COM_36 also reported latent fiscal pressure or crisis. They began academic program prioritization primarily strategically but ended under pressure due to a changed economy.

Table 3.8. Fiscal and Environment Change Drivers Cited by Institutions.

IHE	Fiscal		Environment		
	Fiscal Crisis	Budget Pressure	Enrollment Decline	Legislative Pressure	Accreditation Suggestion
EXP_03		1			
EXP_05		1		1	1
EXP_09		1	1		
EXP_11			1		
EXP_40					
WIP_01		1			1
WIP_07	1	1			
WIP_04	1	1	1		
WIP_10		1			
WIP_02					
WIP_08	1	1			
WIP_12		1			1
WIP_37					
COM_32					
COM_33				1	1
COM_34					
COM_35					
COM_36		1		1	
COM_38	1			1	
COM_39	1				
TOTALS	5	10	3	4	4

Table 3.9. Strategic Change Drivers Cited by Institutions.

IHE	Strategic				
	Mission Deficient	Increased Revenue	Enrollment Growth	Strategic Planning	Quality Improvement
EXP_03				1	1
EXP_05	1			1	
EXP_09					
EXP_11	1				1
EXP_40	1		1	1	1
WIP_01				1	
WIP_07					1
WIP_04				1	
WIP_10					1
WIP_02				1	
WIP_08					
WIP_12				1	
WIP_37				1	1
COM_32				1	1
COM_33					
COM_34				1	1
COM_35				1	1
COM_36		1	1	1	
COM_38					
COM_39					
TOTALS	3	1	2	12	9

Table 3.10. Institutions by Driver Level Scores.

	Score	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
WIP_02	7							1
WIP_37	7							1
COM_32	7							1
COM_34*	7							1
COM_35*	7							1
COM_33	5					1		
EXP_03	4				1			
EXP_40	4				1			
WIP_07	4				1			
WIP_10	4				1			
EXP_05	3			1				
EXP_11	3			1				
WIP_01	3			1				
WIP_04	3			1				
WIP_12	3			1				
COM_36*	3			1				
EXP_09	2		1					
COM_38	2		1					
WIP_08	1	1						
COM_39	1	1						
TOTALS		2	2	6	4	1	0	5

* Institutions citing strategic change drivers that also reported latent fiscal pressure.

The data presented in *Table 3.11* answer the research question “What approaches did they use and what were the results?” It displays the results rankings in top-down order from highest to lowest along with theme ratings for each of the completed institutions. Comparing theme ratings to results rankings illustrates correlation that can be drawn.

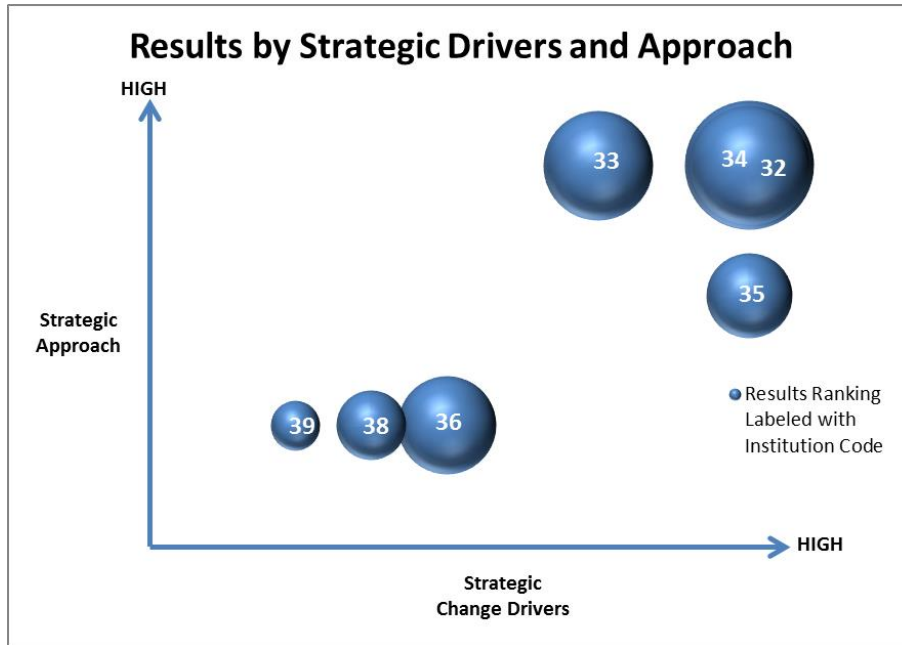
Strategic change drivers and strategic approach in *Table 3.11* show the strongest correlation with results. High approach ratings with high strategic drivers ratings (5-7) match top-ranked results; low approach ratings with low drivers ratings (1-3) match bottom-ranked results. The exception to both is COM_35, which seems to be out of order with COM_36; COM_35 shows a high (7) rating in strategic drivers and a neutral rating for strategic approach compared to a #2 ranking in results. The correlation between strategic change drivers, strategic approach, and results ranking is graphically displayed in *Figure 3.3*. Institutions (labeled by number) are plotted against change drivers and approach with their results ranking illustrated by bubble size.

The two process themes—openness and framework—do not show strong correlation to results, except that poor ratings for both are consistent with low-ranked results. For example, for COM_34 a neutral process with an undeveloped framework are associated with high-ranked results but for COM_35 an open process with a developed framework are associated with low-ranked results, illustrating low correlation. However, both COM_38 and COM_39 had both closed processes and undeveloped frameworks and are ranked lowest for results.

Table 3.11. Tabulation of Assessments for Completed Institutions.

IHE	Results	Strategic Drivers	Strategic Approach	Process Openness	Process Framework	Institutional Culture	Institutional Resistance	Board Engagement	Leadership Engagement
COM_34	#7	7	High	Neutral	Undeveloped	Weak	Strong	High	High
COM_32	#6	6	High	Open	Developed	Neutral	Neutral	High	Unknown
COM_33	#5	5	High	Open	Neutral	Weak	Unknown	High	Unknown
COM_36	#4	3	Low	Neutral	Undeveloped	Unknown	Unknown	Low	Unknown
COM_35	#3	7	Neutral	Open	Developed	Strong	Strong	Unknown	Weakened
COM_38	#2	2	Low	Closed	Undeveloped	Unknown	Strong	High	Unknown
COM_39	#1	1	Low	Closed	Undeveloped	Unknown	Unknown	Unknown	Low

Figure 3.3. Chart of Results by Drivers and Approach.



The institutional themes—culture and resistance—have gaps in data but the data available show little correlation. In a full study subsequent to this pilot, that information will be obtained to refine results for those themes.

The engagement themes—board and leadership—also have gaps in data that a subsequent study will obtain. High board engagement does appear to correlate with high-ranked results. Leadership engagement, while providing very little data, does seem to correlate with results, with COM_34 showing high leadership engagement and high-ranked results and COM_39 showing low leadership engagement with low-ranked results.

Discussion

The results of this pilot study answer the research questions and indicate support for the guiding hypotheses; further research can be conducted using this pilot information to draw stronger conclusions.

Common Drivers of Adaptive Change

The first research question asked what drivers toward adaptive change IHEs have in common. By using open-ended interview questions that prompted for overlooked information, institutional representatives were able to provide any change driver they personally recognized as a contributing factor to the undertaking of academic program prioritization. Ten change drivers were identified that were held in common by the 20 participants in the study. Only one of those ten change drivers was cited by fewer than two institutions. The change drivers were aggregated into three categories: fiscal, environmental, and strategic. An example of a fiscal change driver was an institution that was reacting to a severe and sudden state budget cut. An example of an environmental change driver was an institution that was responding to accreditation findings that needed to be addressed and required program funding to do so, which had to be obtained from existing institutional budget allocations to other programs. An example of a strategic change driver was an institution that desired to achieve a certain fine-arts quality designation. When looked at in aggregate, 12 institutions cited fiscal change drivers, 9 institutions cited environmental change drivers, and 15 institutions cited strategic change drivers, illustrating commonality among institutions in their identified change drivers toward academic program prioritization.

The change drivers discovered support the first hypothesis, that a common set of change drivers will exist for higher education that will be different from private sector change drivers. Lex Donaldson in his Organizational Portfolio Theory (Donaldson, 2000) lists the following as factors driving organizational adaptive change:

Table 3.12. Private Sector Portfolio of Change Drivers.

Pushing Toward Adaptive Change	Impeding Adaptive Change
Business cycle	Diversification
Competition	Divisionalization
Debt	Divestment
Divisional risk	Directors

Similarities and differences can be seen between the private sector change drivers and the higher education change drivers. For example, increased competition was cited by more than one institution but it was usually expressed in terms of decreasing enrollment. Debt constitutes fiscal pressure/crisis in the private sector, which was certainly a driving factor among the higher education subjects. Subjects of the study cited mission deficiency, or the inability to meet the institution's mission given the available resources, which could be viewed as divisional risk. The board of directors in private sector has its equivalents in the form of trustees, boards, and legislatures in the higher education sector. However, the private-sector change drivers of business cycle, diversification, divisionalization, and divestment do not appear to apply to institutions of higher education, unless there is a higher-education equivalent not immediately obvious. Therefore, the first hypothesis is supported, that there is a portfolio of change drivers for

higher education that will be different from those of private sector industries. Further study is needed to compare change drivers between private sector and the higher education sector more thoroughly.

The change drivers that emerged in this study indicate support for the second hypothesis, which states that the identified change drivers will demonstrate a portfolio effect, with some drivers directly triggering adaptive change while some drivers are contingent on other factors. Two institutions cited a single driving force of budget pressure or strategic planning. Two cited fiscal-only change drivers and one institution cited environmental-only change drivers. Those drivers appear to be able to trigger adaptive change regardless of other drivers. The majority of institutions cited multiple driving forces. Two institutions citing strategic change drivers also indicated that lack of urgency originally slowed their ability to prioritize. This supports the portfolio theory concept of impeding factors and the hypothesis of a portfolio effect, i.e. where the effect of one factor is contingent on the presence of a different factor. In the example of the two institutions citing strategic change drivers, the effectiveness of strategic change drivers was contingent on the presence of a sense of urgency among constituents.

Approaches and Results

The second research question asked what approaches toward academic program prioritization were used and with what correlating results. The strongest correlation with results was demonstrated by the change drivers and strategic approaches themes. The combination of strategic change drivers and approaches can be thought of as *strategic intent*: the degree to which the institution operates strategically both in recognizing a

need to make an adaptive change and the manner in which they approach it. Strategic intent correlates strongly with results, with the exception of institution COM_35 (*Table 3.11*).

There appears to be an explanation for that anomaly in the characteristics data for COM_35. The institution appears to have embarked on academic program prioritization with strong strategic intent as evidenced by the high rating (7) on change drivers and a neutral rating on strategic approach. They had an open process and a developed framework, as evidenced by the ratings for each of those themes. The institutional culture was strong and the resistance was strong. Finally, note that the leadership engagement “weakened.” According to the interview notes, when resistance manifested in the organization, the leadership backed down. This seems to explain the lack of good results in spite of strategic intent. The strength of leadership engagement in the process, while unknown for four of the institutions does correlate with successful results among the three where data is available. Where the leadership engagement weakened, it appears to have dragged down the results for the institution.

The strong correlation between strategic intent and results supports the third hypothesis, which states that a correlation will be found between approaches and outcomes that will indicate more successful approaches for other institutions to learn from. The specific lessons learned are discussed in the Lessons Learned section below.

Other factors that answer the question of *how* institutions undertook academic program prioritization are the process openness and process framework, providing characteristics of the overall process used by institutions. They do not show as strong a correlation with results as strategic change drivers and strategic approach. Certainly for

COM_38 and COM_39, where strategic intent was low, the process was closed and the framework undeveloped, results were also low. COM_39 as the lowest-ranked institution for results provides an example of a very closed process with an undeveloped framework. The interviewee was not familiar with more strategically inclined models for prioritization, making statements such as “No one does this voluntarily” and “Everyone does this because of budget cuts.” In reviewing the keywords for COM_39, that institution also used only a single criterion, graduation rates, on which to base program cuts compared to institutions that compiled a rubric or developed a set of criteria. Another aspect of COM_39’s closed process was the use of a website only to make post-hoc announcements rather than communicate criteria and progress throughout the process. These details behind the ratings for process openness and process framework provide lessons learned for other institutions and answer the research question that certain factors and approaches will correlate with results sufficiently to indicate better practices for other institutions to follow.

Institutional Characteristics

Institutional characteristics of culture and resistance are two themes that provide the context in which academic program prioritization was occurring. Together they paint a picture of the institutional readiness to undergo this adaptive change. Two cases, COM_34 and COM_35, appear to tell an interesting story. For COM_34, the institutional resistance was strong; however, the culture was rated as weak. Seemingly, strong resistance in a weak organization (e.g. low shared governance indicating low cohesion among faculty and staff) was not enough to lower results. Since board and leadership

engagement are both rated as high for this subject, we can infer that high resistance in a weak culture was not enough to derail results, perhaps in light of the strength of board and leadership engagement. However, in COM_35, strong culture combined with strong resistance and weakened leadership is associated with lower results than would be indicated by the strategic drivers and approach, which otherwise correlate strongly with results.

Board and leadership engagement are additional institutional characteristics that could explain how neutral openness and an undeveloped framework are associated with successful results. Possibly the interaction of high board engagement helped to overcome other weaker factors. While high ratings on board engagement generally correlate with high success rankings, in the case of COM_38 high board engagement is associated with low results ranking, where the preponderance of other factors was also low. Possibly high board engagement is not enough to overcome other low factors.

This would seem to indicate a contingency effect, where the relationship between results and a contributing factor is contingent on another factor, as predicted by contingency theorists (Donaldson, 2001). What is not clear, in the case of COM_38, is whether a critical mass of low-rated factors overcame high board engagement or whether a single low-rated factor was strong enough to outweigh board engagement. The missing information on leadership engagement could help to tell that story. The second hypothesis predicted a portfolio effect among change drivers. Results appear to indicate a portfolio effect among overall process, institutional readiness, and leadership engagement factors, where the impact of one or more factors is contingent on the strength of another factor.

The institutional characteristics analysis also supports the fourth hypothesis, that “Institutional characteristics will influence approaches and outcomes and their correlations.” The relationship between strong resistance and results is contingent on the strength of the culture to begin with. Where resistance is strong and the culture is strong, results were low but where resistance is strong and the culture is weak results were not low. While results do not appear dependent on institutional characteristics, given the low correlation in general, institutional characteristics do appear to influence the outcome, as predicted in the fourth hypothesis, and contain a contingency effect, as predicted for change drivers in the second hypothesis.

Lessons Learned

As indicated in the discussion of approach and results above, from the results of this study institutions can learn better practices to follow that can be summarized as:

- Strategy-driven versus crisis-driven
- Overall process
- Institutional readiness
- Leadership engagement

For the ***strategy-driven versus crisis-driven lesson***, based on the correlation between strategic intent and results, institutions can learn from this that a proactive, strategic rationale and approach will generally yield greater results than a reactive, crisis-driven rationale and approach.

In a strategy-driven mode, institutions have more time to be open and inclusive. Institutions that were under fiscal pressure or crisis made statements such as, “We didn’t

have time to plan,” or “We were given a 90-day mandate to prioritize and had no time to include people in the process.” On the other hand, strategy-driven institutions that reported latent fiscal pressure also noted that they had trouble galvanizing people into action until the crisis hit. Constituents were skeptical or failed to see the need to undertake such a dramatic institutional effort. They made statements such as, “Once people saw the need they were more inclined to participate. It was still difficult but they knew we needed to do something.” Institutions found it harder to get buy-in without a sense of crisis or urgency, but the process worked better and results were higher when they could operate strategically rather than reactively. Institutions who collectively sought to achieve a quality benchmark without fiscal pressure achieved the highest results.

Institutions can learn from this that it is better to predict the need to change and operate strategically, while creating a sense of shared urgency to reach a common goal. Urgency and strategy best go hand in hand. As an administrator, it is more difficult to implement a transformative change with strategic intent, when that transformative change is disruptive and painful for constituents, and when those constituents see no real need to subject themselves to it. Yet it is better to implement the change before the sense of urgency becomes a crisis almost overnight. To balance those paradoxical recommendations, a leader can start the process with strategic intent before a crisis occurs, and create a sense of urgency by reminding constituents of the very real crises that historically have been served upon them. This is the same challenge as engaging constituents to develop a disaster recovery plan when they have not experienced any disasters recent enough to remember the pain and want to prepare. Leveraging other

peoples' disasters or crises in the news is another helpful strategy, as is biding one's time if necessary but being as prepared as possible in advance. The paradox is doable, but admittedly challenging.

For the ***overall process lesson***, institutions can learn that while the correlation between process and results were not particularly strong and may be contingent on other factors, there is certainly a correlation between a closed and undeveloped process and poor results. Maintaining an open process, i.e. one that is broadly inclusive of participants and looks broadly across the institution rather than academics alone, seems to contribute to more successful results. Likewise, while a robust developed framework, i.e. broad criteria and a proven model to follow, does not guarantee good results, an undeveloped framework is still more likely to yield poor results.

Institutions can learn from this that it is better to use an open process and developed framework than to lack inclusiveness or use a narrow framework.

For the ***institutional readiness lesson***, institutional characteristics of culture and resistance combine to create a context of institutional readiness for undertaking academic program prioritization. Strong resistance combined with a strong culture could impede progress or adversely impact results; whereas, strong resistance with a weak culture can be overcome. To explicate, a strong culture is characterized by trusting relationships and strong coupling among faculty, such as through shared governance or unionization, compared to a weak or more loosely coupled culture. If resistance is strong and a strong network is already in place, it will be easier to galvanize more individuals into the resistance movement. In a weak or loosely coupled culture, a resistance movement will have a harder time gaining traction.

The relationship between results and institutional readiness appears to be contingent on leadership engagement and possibly influenced by process. Institutions can learn from this that they should assess their institutional readiness prior to beginning academic program prioritization and identify factors, such as process and engagement, that could be used to mitigate those characteristics or that could compound the risk.

For the *leadership engagement lesson*, several subject interviews suggest insight into leadership engagement. COM_38 suggested that it was critical that the board take “a blood oath” to support the institution’s efforts as they are likely to be lobbied publicly and individually to undermine the decisions. COM_35 held the weakened leadership as a significant factor in the low results for that institution after a promising start. As a singular example, COM_33 reported that the executive in charge of academic program prioritization launched the initiative as a means of building trust among faculty in a formerly low-trust environment, and succeeded. In this instance academic program prioritization was seen not as a risky venture but as an opportunity for cultural transformation as well as competitive advantage. COM_34 was able to overcome strong resistance with a combination of a strong culture but high leadership engagement. High engagement by the board and institutional executives appears to be a tipping factor and possibly a contingency of other factors.

Institutions can learn from this that without leadership engagement they are at greater risk of poor results and if their leadership engagement is not predictably high they may be well served to improve their institutional readiness and overall process before embarking on academic program prioritization.

Predictions

The final research question asked what predictions could be made for institutions considering or beginning academic program prioritization. Since the strongest correlation with positive results for those institutions that had completed academic program prioritization was found in strategic drivers and strategic approach, it is possible to plot the exploring and work-in-progress institutions on the same x and y axes to predict their results based on those factors. Figure 3 in the Results section demonstrated that institutions plotting high on the strategic-drivers axis and high on the strategic-approach axis correlated with high results.

Figure 3.4 below plots exploring institutions against the same axes of strategic change drivers and strategic approach. Comparing these data points to those in Figure 3, it appears that EXP_11 and EXP_40 are likely to realize positive results from their academic program prioritization. As discussed above, results are likely contingent on their overall process, institutional readiness, and leadership engagement.

Figure 3.5 plots work-in-progress institutions against the same axes of strategic change drivers and approach. Comparing these data points to those in Figure 3, it appears that WIP_37 and WIP_02 are likely to realize positive results from their academic program prioritization, contingent on overall process, institutional readiness, and leadership engagement.

Figure 3.4. Exploring Institutions by Drivers and Approach.

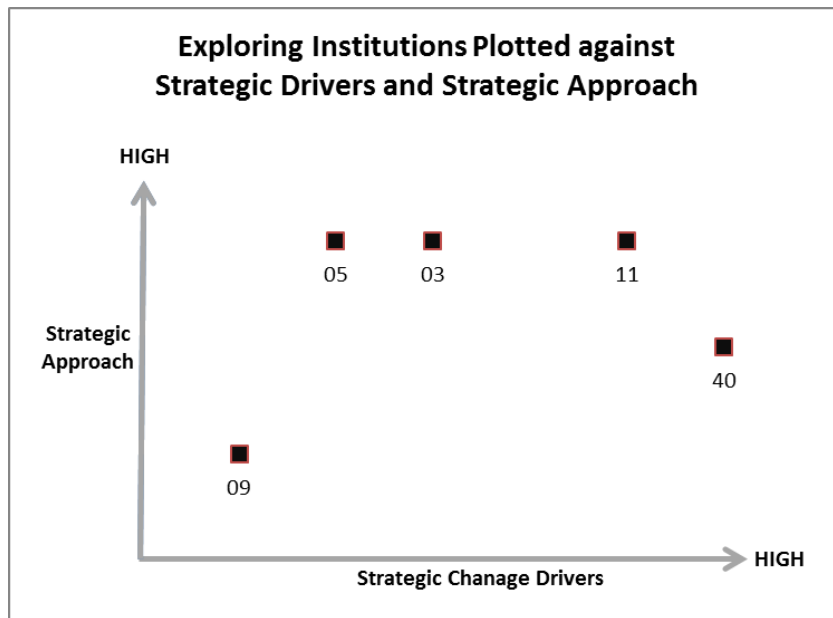
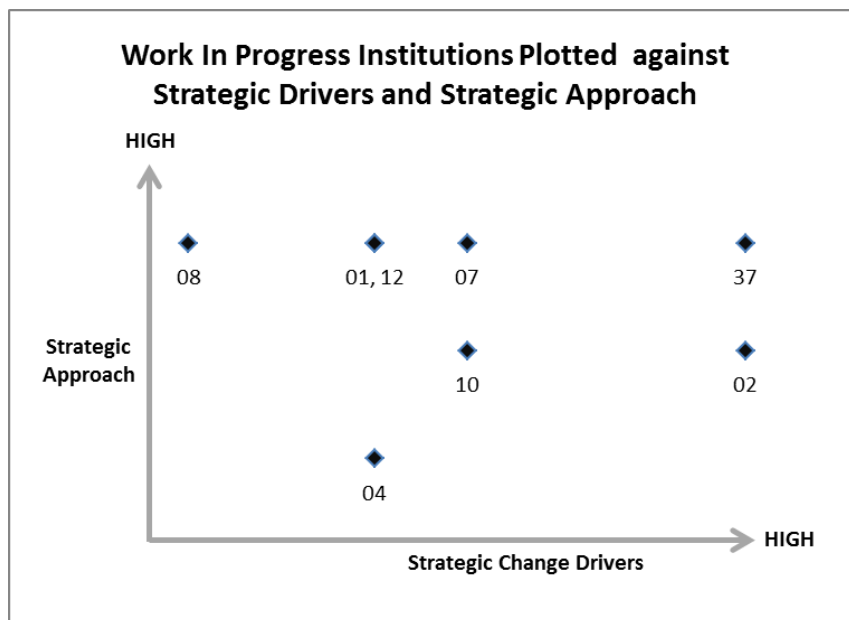


Figure 3.5. Work-in-Progress Institutions by Drivers and Approach.



This answers the third research question of the ability to predict outcomes based on a correlation of approaches with results. Further research is needed to could confirm the validity of these correlations and their predictive potential.

Future Research

As a pilot, this study revealed techniques to modify, gaps in information from existing participants, research questions to answer more fully, and new studies to pursue.

Techniques to modify include:

- Audio recording all interviews
- Refining the question set to more directly target needed information
- Guiding the interviews more strictly, yet tactfully, to stay on track
- Gathering more empirical evidence to support interviewee perspectives

Gaps in information include:

- Process framework
- Institutional characteristics
- Leadership engagement

Research questions include:

- Compare the portfolio of higher education change drivers with the portfolio of private-sector change drivers to better understand the similarities and differences
- Investigate more thoroughly the institutional characteristics and process characteristics to draw stronger correlations between approaches and results

New studies include:

- Test portfolio theory and portfolio effect on the overarching themes of strategic intent, overall process, institutional readiness, and leadership engagement
- Follow exploring and work-in-progress subjects to completion to compare process, institutional characteristics, and leadership engagement with final results
- Study administrative prioritization methods and framework, as most of the existing work has focused on academic prioritization
- Compare institutional performance of strategy-driven subjects to crisis-driven
- Compare institutional performance before and after academic program prioritization
- Compare models of private industry organizational redesign “refitting” the institution to its environment with higher education models of administrative restructuring
- Compare administrative structures with institutional performance to define and evaluate what constitutes organizational “fit” for higher education institutions as opposed to private-sector organizations

The comparison studies are dependent on a fundamental metric for the industry of higher education: the definition and measurement of institutional performance. Until we can understand institutional performance we cannot empirically evaluate and compare the

results of any adaptive change, be it academic program prioritization or another. Future research must begin there.

CHAPTER FOUR

ORGANIZATIONAL PORTFOLIO MANAGEMENT AND
INSTITUTIONS OF HIGHER EDUCATION

Contribution of Authors and Co-Authors

Manuscripts in Chapters 4, 5, 6

Author: Anne Milkovich

Contributions: Sole author and contributor.

Manuscript Information Page

Anne Milkovich

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FEATURE ARTICLE

Organizational Portfolio Management and Institutions of Higher Education

by Anne Milkovich

The outcome of organizational portfolio management is a tighter alignment of institutional resources with strategic objectives and defined mission.

INTRODUCTION

THE CHANGING CONTEXT OF HIGHER EDUCATION is creating a perfect storm of conditions (Gumpert 2007) that could compel institutions of higher education to transform more dramatically than ever before in order to adapt to the industry paradigm shift. While higher education has faced changing forces in the past, this is the first time that all five of the recognized industry forces known as “Porter’s Five Forces” (Porter 1980)—supplier power, threat of substitutes, threat of new entrants, buyer power, and competitive rivalry—are changing simultaneously. In the higher education sector, these forces manifest as (a) society shifting toward a view of higher education as an individual benefit rather than a social good, thus believing the expense should be borne by the individual and not the state; (b) state budgets in fiscal crisis in conjunction with the economic downturn; (c) legislatures less inclined to fund institutions of higher education as a result of social pressures and less able to fund them as a result of fiscal pressures; (d) for-profit institutions increasing in number and competitiveness; (e) enrollments rising, increasing pressure on institutional infrastructure; (f) the student demographic shifting from students immersed in the traditional post-high-school four-year experience to older working adults or more transient students who stop and start or come and go among schools; and (g) distance education breaking down geographic boundaries and expanding the competitor base

from which students can select an institution (Birnbaum 1988; Duderstadt and Womack 2003; Eckel 2002).

In private-sector industries, organizations adapt to changing conditions by restructuring their portfolio of resources to align with new objectives (Donaldson 2000), similar to the rebalancing of a financial portfolio in response to changing risk/return objectives (Kumar, Ajjan, and Niu 2008). In restructuring the portfolio, resource investments are rearranged to ensure alignment with predetermined criteria, such as strategic objectives. Through a process of evaluation and prioritization, a mission-critical program may be augmented with additional resources while a lower priority program may see its resources reduced or eliminated.

Some higher education institutions are likewise reevaluating their organizational portfolio of programs in an effort to optimize performance and meet strategic objectives (Dickeson 2010). This strategy may be effective in improving or demonstrating institutional performance and justifying resource allocation in alignment with mission objectives. However, little research exists that studies portfolio management in institutions of higher education.

Understanding the application of organizational portfolio management in the higher education sector can help institutions respond to demands for accountability and performance improvement and react with greater agility to

changing sector-level conditions while maintaining strategic alignment with quality and the academic mission.

BACKGROUND

For the purposes of this study, the term *organizational portfolio management* is operationalized as the process of evaluating, selecting, and prioritizing the allocation of organizational investments in alignment with predetermined criteria and parameters (Donaldson 2000; Hossenlopp 2010; Project Management Institute 2008; Reginato 2005). In the higher education sector, the organizational portfolio consists of academic and administrative programs and their associated investment of institutional resources (e.g., funding, physical assets, human resource time and effort).

Effectiveness is defined here as achieving the desired quality of results, irrespective of cost. *Efficiency* is defined as achieving outputs greater than the inputs invested, irrespective of quality. Improving institutional performance is defined as improvement in both effectiveness and efficiency.

In an era of increased funding pressure, public scrutiny, and performance expectations (Immerwahr, Johnson, and Gasbarra 2008; McPherson and Shulenburg 2006; Richardson and Martinez 2009; Sullivan et al. 2012), the study of institutional performance is increasingly important despite the lack of a clear path for improving performance or even a shared understanding of how to measure performance (Sullivan et al. 2012). At the same time that calls for cost control and accountability are on the rise, studies show that overall instructional expenditures have remained constant since 1987 (McPherson and Shulenburg 2010) and that instructional costs are directly attributable to the disciplines offered (Middaugh 2010). Yet, there are increasing demands to control costs, which can only be done through changing the institutional mission and disciplines offered.

Portfolio management saw increased application in multiple private- and public-sector industries (Donaldson 2000; ISACA 2012; Kumar, Ajjan, and Niu 2008; Miljkovic 2006; Project Management Institute 2008; Rad and Levin 2006; Reginato 2005) after the 1990 Nobel Prize in Economics was awarded to Harry Markowitz for his 1952 portfolio management theory (Modern Portfolio Theory 2009). While commonly associated with financial portfolios, the theoretical application of portfolio management is increasingly being applied to other portfolios of organizational resources, such as portfolios of projects, new product developments, and research investments (Hossenlopp 2010; Kumar, Ajjan, and Niu 2008).

Organizational portfolio management is a process of organizational change through resource reallocation. While scientific management theories and practices exist to guide organizational change within institutions of higher education (de Zilwa 2007; Kezar 2014; Kumar, Ajjan, and Niu 2008), the available research has focused on only narrow aspects of the theory and practice of organizational portfolio management, such as program review and selectivity (El-Khawwas 1994), organizational responses among community colleges (Gumport 2003), and sociological factors involved in academic program reduction (Gumport 1993, 2000, 2005).

In popular articles on the subject, Harper (2013) proposed the use of portfolio analysis to strategically manage the academic programs of an institution based on demand, contribution margin, and service to other programs. While not specifically directed at academic program portfolios, Daigneau (2010) also advocated portfolio management as a means of prioritizing resource allocation for university facilities maintenance and investment.

The applicability of organizational portfolio management as a strategy for performance improvement may be indicated or predicted through institutional characteristics such as size or type. Blau (1973) found that institutional size correlates with many other aspects of an institution, including differentiation

in administrative units and academic specialization into new fields. Past differentiation and specialization would contribute to the wide distribution of limited resources and the potential need to optimize the portfolio due to mission fragmentation. A study by Powell, Gilleland, and Pearson (2012) using structured equation modeling found a predictive relationship between the efficiency and effectiveness of an institution and the institutional characteristics of size, Carnegie class, and the percentage of students receiving aid. This study yielded the Benchmark Model of Institutional Efficiency and Effectiveness against which four-year public and private not-for-profit institutions could compare their spending for instructional costs, academic support, and student services to the baselines established in the model and improve their performance by adjusting their spending—in effect optimizing their portfolio of institutional resources in those categories.

The purpose of this study is to identify any relationship between institutional characteristics and the initiation of organizational portfolio management, asking specifically: Is there a relationship between institutional characteristics and the initiation of organizational portfolio management? This study will contribute to the body of knowledge by providing empirical evidence to support the assumption that certain institutional types are more likely to initiate organizational portfolio management to improve institutional performance.

METHODS

This is a descriptive study looking at the relationship between institutional characteristics and the initiation of organizational portfolio management. The scope of this research is confined to a study group of 62 institutions that initiated organizational portfolio management and a comparative group of 3,346 institutions extracted from the Integrated Postsecondary Education Data System (IPEDS). The study group was compiled based on inquiry and analysis to the best of the researcher's ability by three means: (1)

Robert C. Dickeson, an expert in the field, provided the majority of the institutions' names based on his work and experience in the discipline; (2) the researcher used snowballing technique to identify additional subjects; and (3) the researcher searched through public web sites and news articles to identify the remaining subjects.

The limitations of this study include a sample of convenience $n = 62$ with lack of random selection or assignment. There is no confirmation that all the institutions in the study group completed academic program prioritization. It is not known whether institutions in the comparative group did or did not initiate organizational portfolio management. Since the activity is culturally controversial (Dickeson 2010) and little literature exists on the topic, it is assumed that at most only a small minority of the comparative group may have undertaken academic program prioritization. While IPEDS data could be misreported by institutions due to time or resource constraints, they are used for a wide range of public and government purposes and assumed to be internally valid and reliable. Because the population is confined to the comparative group of two-year and four-year degree-granting institutions, external validity is limited; results can only be generalized to like institutions.

The study variables were delimited to the institutional characteristics available in IPEDS and identified in the literature as relevant to indications of institutional performance (Blau 1973; Powell, Gilleland, and Pearson 2012). The initial variables under study were Type (public and private not-for-profit two-year and four-year), Affiliation, Size, Carnegie Class, Land-Grant Status, and Percentage of Students Receiving Financial Aid as defined in figure 1.

A comparative group ($n = 3,346$) was extracted from the IPEDS universe of participating institutions for the year 2008–2009, delimited to degree-granting two-year and four-year public and private institutions in order to exclude invalid comparisons to IPEDS institutions that are non-academic, such as certificate-granting cosmetology schools,

Figure 1 Institutional Characteristics Variables

Variable	Defined	Operationalization	
		Variable in IPEDS	Grouped as
Type	Classification of an institution as public or private and the degrees it confers, e.g., 4-year, 2-year. The study included all public and private 4-year and 2-year institutions.	Sector	Public 4-year Private 4-year 2-year
Affiliation	Whether an institution is public, private with religious affiliation, or private without religious affiliation. The study included all public institutions and private institutions, with or without religious affiliation.	Control or Affiliation	Public Private with religious affiliation Private without religious affiliation
Size	Student enrollment in the Fall semester grouped into ranges, e.g., 1,000–4,999; 5,000–9,999, etc. The study included all enrollment sizes.	Size Category	Under 5,000 5,000–9,999 10,000–19,999 20,000 and Above
Land Grant	Whether an institution is a land-grant institution or not. The study included all land-grant and non-land-grant institutions.	Land Grant	Land-grant institution Not land-grant institution
Carnegie Class	National classification of institutions based on programs, research, urbanization, campuses. The study included all degree-granting not-for-profit institutions; certificate-only and for-profit institutions were excluded.	Carnegie Class: Basic	Associate's Doctoral and Research Universities Master's Colleges and Universities Special Focus and Tribal Colleges
% of Students Receiving Aid	The percentage of students receiving financial aid categorized by quartile. The study included all quartiles of students receiving financial aid.	% of Students Receiving Aid	Quartile 1: <45% Quartile 2: 45%–63% Quartile 3: 64%–83% Quartile 4: >83%

Note: Variables marked with *** are those found to be statistically significant.

as well as for-profit institutions whose portfolios of course offerings are profit-driven. The year 2008–2009 was the earliest available year common to all variables and was an appropriate year to study as the majority of institutions initiating academic program prioritization did so after 2007 according to Dickeson; many of them were reacting to fiscal pressures resulting from the economic downturn of that era according to interviews conducted in 2011 by the researcher with institutional leaders from the study group.

The Size categories were reduced from five in the IPEDS Size variable to four for the purposes of this study, combining the original Under 1,000 and 1,000–4,999 into a single category of Under 5,000 because of the small counts for those categories in the study group. The Carnegie Class categories were reduced into the four categories listed in figure 1 for the same reason. The Percentage of Students Receiving Financial Aid variable was reduced into quartiles. In the comparative group, 281 institutions did not report data for Percentage of Students Receiving Financial Aid and were excluded from that analysis.

The institutions in the study group were removed from the comparative group to ensure independence of samples. Institutions in the study group were then categorized as organizational portfolio managing (OPM) institutions (OPM = yes); institutions in the comparative group were categorized as not managing their organizational portfolio (OPM = no).

A chi-square test of independence was conducted to analyze the relationship between the study group (OPM = yes) and the comparative group (OPM = no) for variables of Type, Affiliation, Carnegie Class, Land-Grant Status, and Percentage of Students Receiving Financial Aid. The significance and effect of the chi-square analysis are illustrated in figure 2. The expected frequencies of each characteristic were compared to the observed frequencies in a ratio. The ratio illustrates the extent to which the observed frequencies deviate from the expected frequencies, indicating whether that characteristic appears in the group more than or less than expected.

RESULTS

The results of this study indicate that there is a statistically significant, weak association between the initiation of organizational portfolio management and the institutional characteristics of Type, Size, Land-Grant Status, and Carnegie Class, as illustrated in figure 2. Results for

Affiliation and Percentage of Students Receiving Financial Aid were not statistically significant.

The analysis of the expected frequencies, provided in figure 3, shows that in the comparative group, the observed frequencies of the characteristics closely match the expected frequencies at ratios of 0.9 and 1.0. In the study group, the ratio of observed frequencies to expected frequencies varies. A ratio greater than 1.0 indicates that characteristic is present in the study group more than expected; a ratio less than 1.0 indicates that characteristic is present in the study group less than expected. Public four-year institutions were 2.7 times more likely to appear in the study group than in the comparative group. As institutional size increases the ratio increases, from 0.5 at Under 5,000 to 3.5 at 20,000 and Above. Larger institutions appear in the study group disproportionately to their appearance in the comparative group. Land-grant institutions and doctoral and research institutions appear in the study group at 4.0 times the frequency they appear in the comparative group.

DISCUSSION

The results of this study answer the research question by showing that institutional characteristics have a statistically significant, weak association with the initiation of organizational portfolio management. These results are similar to those of related studies in which institutional characteristics have associations with institutional challenges and responses. Since organizational portfolio management is a strategy to improve institutional efficiency or effectiveness, those same institutional characteristics might be expected to have an association with the initiation of that strategy. This study shows that is not clearly the case.

Blau (1973) and Powell, Gilleland, and Pearson (2012) found that Size and Carnegie Class were predictors of the efficiency and effectiveness of the institution; Powell and his colleagues further found that the percentage of students receiving

Figure 2 Results of Chi-Square Analysis of Significance and Effect

Variable	Chi-squared	p	Phi or Cramér's V
Sector	53.615	.000	.127
Affiliation	3.591	.166	.033
Size	48.909	.000	.121
Land-Grant Status	17.567	.000	.072
Carnegie Class	84.846	.000	.159
% of Students Receiving Financial Aid	9.156	.057	.052

Figure 3 Frequency and Distribution of Institutional Characteristics

Variable	Comparative Group			Study Group		
	Observed Frequency	Expected Frequency	Ratio of Observed to Expected Frequencies	Observed Frequency	Expected Frequency	Ratio of Observed to Expected Frequencies
Sector***						
Public 4-year	658	680	1.0	35	13	2.7
Private 4-year	1525	1519	1.0	23	29	0.8
2-year	1101	1085	1.0	4	21	0.2
Affiliation						
Public	1675	1681	1.0	38	32	1.2
Private with religious affiliation	722	717	1.0	8	14	0.6
Private without religious affiliation	887	886	1.0	16	17	0.9
Size Category***						
Under 5,000	2260	2238	1.0	20	42	0.5
5,000–9,999	500	506	1.0	15	10	1.5
10,000–19,999	327	338	1.0	13	6	2.2
20,000 and Above	197	207	1.0	14	4	3.5
Land Grant***						
Land Grant	105	111	0.9	8	2	4.0
Not Land Grant	3179	3173	1.0	54	60	0.9
Carnegie Class***						
Associate's	1143	1126	1.0	4	21	0.2
Research and Doctoral/Research	269	284	1.0	20	5	4.0
Master's Colleges and Universities	600	614	1.0	26	12	2.2
Baccalaureate Colleges	661	661	1.0	12	13	0.9
Special Focus and Tribal Colleges	611	600	1.0	12	13	0.9
% of Students Receiving Financial Aid						
1st Quartile	752	748	1.0	10	14	0.7
2nd Quartile	778	782	1.0	19	15	1.3
3rd Quartile	724	728	1.0	18	14	1.3
4th Quartile	749	750	1.0	15	14	1.1

Note: Variables marked with *** are those found to be statistically significant.

financial aid was a predictor of institutional efficiency and effectiveness. In the case of organizational portfolio management, a strategy undertaken to improve efficiency or effectiveness, Type, Size, Carnegie Class, and Land-Grant Status have an association. Public four-year institutions, larger institutions, research institutions, and land-grant institutions are all more likely to initiate organizational portfolio management than other institutions. How do we explain the association of these characteristics compared to the association of characteristics from past studies?

That large, public, research, and land-grant institutions are more likely to initiate a strategy to improve efficiency or effectiveness is not surprising as calls for accountability and improved institutional performance tend to focus on taxpayer-funded institutions (Burke 2005; Sullivan et al. 2012) while legislative budget cuts have driven fiscal urgency over the last decade (Dickeson 2010).

One proposed theory that explains the association between the characteristics of large size, public control, research activity, land-grant status, and the initiation of organizational portfolio management is *mission fragmentation*. Blau (1973) found that institutional size was a predictor of institutional differentiation and academic specialization, which in turn allocated limited resources across a broader spectrum of institutional objectives, that is, a higher number of specializations. Institutions with widely defined missions, likely associated with land grants, research activity, and large size, would find their resources fragmented over time as more and more mission-centric demands for limited resources arise, each demand soundly grounded in any of the multiple, equally essential, mission objectives. Smaller, private, and two-year institutions and institutions with more specialized missions, such as special-focus institutions or tribal colleges, have fewer competing demands on their resources.

Considering that the outcome of organizational portfolio management is a tighter alignment of institutional resources with strategic objectives and defined mission, it can be

deduced that institutions more likely to fragment their resources across multiple competing demands are also more likely to reach a point where realigning their resources through organizational portfolio management becomes imperative. Where in 1973 Blau found that larger institutions were spawning more specializations, 35 years later in 2008–2009 (the year of study) larger institutions were seeking to reign their resource alignment back in. The generation of proliferating specializations in larger institutions fragmented the capacity of those institutions to deliver on their increasing number of objectives, resulting in a boomerang effect of strategic realignment through portfolio management. This also ties into Middaugh's finding that "80 percent of the variation in instructional costs across four-year institutions in the United States . . . is explained by the mix of disciplines that make up the academic curriculum" (Middaugh 2010, p. 111). The broader the mix of disciplines, the greater the variance in instructional costs even while total instructional costs have remained constant, resulting in a fragmentation of finite resources across the mix and the resultant need to realign the organizational portfolio.

The theory of mission fragmentation is also supported by the findings of McPherson and Shulenburg (2010) showing that educational expenditures per student FTE remained constant in the two decades preceding the study year. Costs per student FTE are not spiraling out of control; therefore, undertaking a prioritization of academic programs is likely not a result of increased expenditures per student FTE.

Results of this study indicate that large, public, land-grant, and doctoral/research institutions are more likely to initiate organizational portfolio management, although the predictive association is weak. The theory of mission fragmentation explains the results of this study, reflecting the tendency of these types of institutions to add specializations in response to a wide array of constituent demands, which then leads to the initiation of organizational portfolio management as an intervention to reallocate and realign finite resources to improve institutional performance.

As there is little research in this domain of knowledge, much opportunity exists to fill the gap. Recommendations for future research include:

- » Drawing on a larger sample of institutions engaged in organizational portfolio management to mitigate the limitations of this study
- » Investigating whether the institutions in the study group completed the organizational portfolio management process or halted it
- » Investigating the experiences of those involved with the process of organizational portfolio management and their perspective on its effectiveness
- » Evaluating whether the application of organizational portfolio management among institutions of higher education results in improved institutional performance

Leaders of higher education institutions can use the results of this and future studies to evaluate the application of organizational portfolio management as a solution to their institutional performance challenges with the knowledge that their institutional characteristics, particularly type, size, land-grant status, and Carnegie class, can inform their decision and provide empirical support for that often controversial undertaking.

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AUTHOR BIOGRAPHY

ANNE MILKOVICH is assistant vice chancellor and chief information officer at the University of Wisconsin Oshkosh and a doctoral student in higher education administration at Montana State University, researching the application of portfolio management and program prioritization to improve institutional performance. She has an MBA from the University of Montana and a CGEIT certification from ISACA (Certified in the Governance of Enterprise IT); she is a PMI-certified Project Management Professional (PMP) and a SHRM-certified Senior Professional in Human Resources (SPHR).

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WHAT IS INTEGRATED PLANNING?

Integrated planning is the linking of vision, priorities, people, and the physical institution in a flexible system of evaluation, decision-making and action. It shapes and guides the entire organization as it evolves over time and within its community.

CHAPTER FIVE

HOW INCREMENTAL SUCCESS SLOWS TRANSFORMATIVE CHANGE AND
INTEGRATED PLANNING ACHIEVES IT

Contribution of Authors and Co-Authors

Manuscripts in Chapters 4, 5, 6

Author: Anne Milkovich

Contributions: Sole author and contributor

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HOW INCREMENTAL SUCCESS SLOWS TRANSFORMATIVE CHANGE AND INTEGRATED PLANNING ACHIEVES IT

Abstract

Higher education institutions are under pressure to make transformative changes toward improving key areas of performance: access, affordability, price, and productivity to name a few. Institutions have responded with budget cuts and efficiency gains with incremental success. Yet paradoxically the very success they have achieved has also impeded the transformative change their stakeholders seek.

Many theories exist to support adaptive change in higher education. A single foundational theory of organizational change in industrial enterprises explains the paradox and illustrates how incremental success slows transformative change. Structure Contingency Theory was introduced by Alfred Chandler in 1962 and encapsulates a number of higher education change theories, further grounding practitioners in assisting institutions to adapt to changing conditions and informing their planning efforts.

To achieve transformative change requires a model of integrated planning to synthesize unit improvements into institutional change greater than the sum of its parts. This article presents structural contingency theory to explicate the change process and introduces institutional portfolio management as an operational model of integrated planning. It speaks to an audience of practitioners seeking pragmatic solutions to very real and present problems.

HOW INCREMENTAL SUCCESS SLOWS TRANSFORMATIVE CHANGE AND INTEGRATED PLANNING ACHIEVES IT

The higher education sector is under pressure to undertake transformative change that leads to improvement in key areas of institutional performance such as access, affordability, and productivity. Institutions have adjusted to public pressure or funding reductions by cutting expenditures and seeking efficiency improvements, with incremental success. Few have achieved transformative change on the scale expected by national stakeholders. And in fact, the very incremental success they have achieved has counteracted and slowed the transformative change they need.

Integrated planning prevents incremental success from slowing transformative change. Integrated planning is indeed elusive and abstract but practical frameworks can be borrowed from other industries where integrated planning is well established. In this article I provide support substantiating the assertion that incremental change is an impediment to transformative change; I also provide a practical framework of integrated planning well established in private industry that can be applied in higher education to overcome the impediment of incremental change.

Why is this important? Institutions of higher education are under increasing pressure to transform. Scrutiny of institutional performance has been building over the last couple of decades, with greater demand placed on institutions of higher education to demonstrate their efficiency and effectiveness and improvements thereof (Gumport, 2007; Powell et al., 2012; Serna, 2013). The Spellings report, commissioned by United States Secretary of Education Margaret Spellings in 2006 (United States Department of

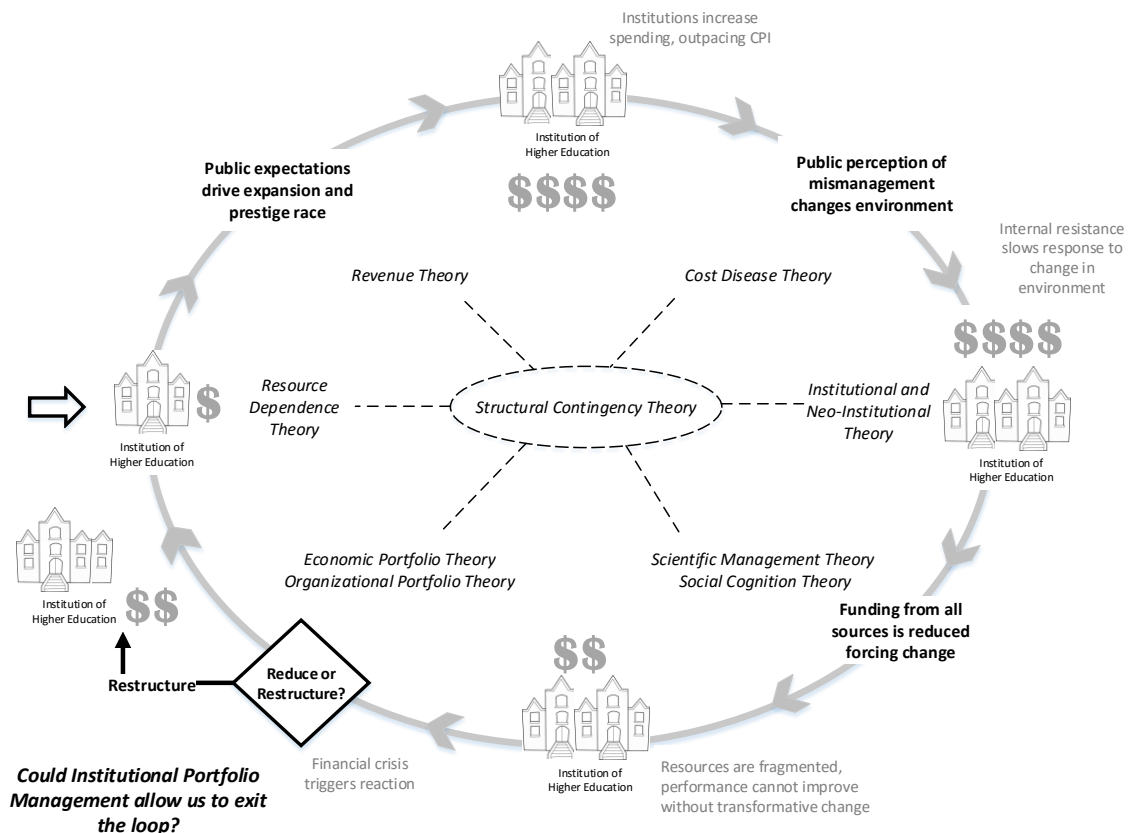
Education, 2006) criticizes higher education as “at times self-satisfied, and unduly expensive” (p. xii), comparing it to industries that have failed to respond to changes in the environment and implying that without fundamental change it is headed toward obsolescence. The Spellings report, citing issues with “efficiency, productivity, transparency, and accountability” (p. 10) is but an example of increasing pressure demanding performance improvement in higher education. Our critics have seen transformative change in other private and publicly funded industries. They have seen layoffs and restructurings, mergers and acquisitions, outsourcing and offshoring, in dissimilar industries such as manufacturing but also in more institutional industries such as healthcare and banking. Right or wrong, like it or not, they simply may not be satisfied that leaders in higher education are doing our part to control costs and extend access until they have seen transformative change the likes of which they have seen elsewhere.

How Incremental Success Slows Transformative Change

First let’s unpack structural contingency theory to explain how incremental success slows transformative change. *Structural contingency theory* posits that a relationship exists between the structure of the organization and its performance, and the nature of that relationship is contingent on external variables, referred to as contingencies. Structural contingency theory was developed by Alfred Chandler in the mid-20th century to explain organizational structures and performance of industrial entities (A. D. Chandler, 2013; Donaldson, 2001; Lawrence & Lorsch, 1986; Pfeffer & Salancik, 2003; Sporn, 1999). According to Chandler, when an organization is performing well, its structure is well fitted to the external variables, such as market

environment, resource availability, or competition. When an external variable changes, it changes the relationship between the organizational structure and the organization's performance. The organizational structure is now in misfit with its environment, which in turn degrades performance. When performance degrades sufficiently, it prompts the organization to redesign its structure to bring it back into fit with its environment. Figure 1 illustrates the cycle in a conceptual model.

Figure 1. Structural Contingency Theory Illustrated.



But performance doesn't degrade visibly and significantly. Managers make incremental, unit-level changes that improve unit-level performance sufficiently to satisfy the unit-level concern; or as the term has been coined, managers *satisfice*. Because unit-

level managers are motivated to satisfice and do not see overall performance effects, performance improves sufficiently to prevent a crisis but remains suboptimal.

Incremental success leads planners—leaders who are responsible for planning—to accept that improvement has been achieved. An organization can remain in this suboptimal state for an extended period of time unless and until performance degrades to a crisis point, which triggers a more transformative change (Donaldson, 2001).

Structural contingency theory has been studied in the private sector and not-for-profit sector but few scholars have studied or applied it in higher education literature. However, many theories that have been studied and applied in higher education support different aspects of structural contingency theory and further elaborate the cycle of external forces and internal responses. They are each a narrow slice of the overarching theory of structural contingency.

Structural contingency theory posits that the performance of an organization is contingent on organizational structure being well fitted to external variables, such as resources or funding among others, which change. Resource dependence theory views organizations as dependent on their environment and the resources they obtain, which in turn influences their effectiveness and ability to survive. According to this theory, organizational performance exists in an ecosystem of resources that it needs and its performance is affected by availability of those resources, be they funding, labor supply, or raw materials (Gornitzka, 1999; A. J. Hillman et al., 2009; Oliver, 1991; Pfeffer & Salancik, 2003; Sporn, 1999).

Structural contingency theory then posits that managers enact change within the limits of bounded rationality, that is, within the bounds of what they know, what they can

influence, and what time they have. Those actions have counter effects, which can also counteract greater performance improvement (Donaldson, 2000, 2001). Institutionalism values conformity and convention as stabilizers against rapid change; external pressures are met by internal norms, which shapes the speed and nature of change (Kezar, 2014; W. R. Scott, 1987, 2008). Within institutionalism, the theory of embedded human agency defines the paradox wherein institutions are the product of human actors as well as the influencers of human actions. Those individuals who break with dominant group norms are referred to as institutional entrepreneurs (Battilana, 2006). Where institutionalism seeks to serve the interests and legitimacy of the organizational unit (Oliver, 1991), institutional entrepreneurs seek to serve their own interests and legitimacy, resisting change through passive adaptation when they do not share the interests of their executives and when they have sufficient social capital to do so (de Zilwa, 2007). This would be particularly true in higher education, where a high number of actors view the organization through a strong sense of social capital and self-governance (Birnbaum, 1988; Duderstadt & Womack, 2003). Thus internal forces shape change at an incremental level and resist change at a transformative level.

The remaining schools of thought on higher education sociology that elaborate a premise of structural contingency theory are those of scientific management and social cognition. Scientific management is a prescriptive change process, whose practitioners apply a standard set of tools to enact change regardless of the context. In this perspective, managers recognize and logically respond to external forces by driving internal change (Kezar, 2014). A hallmark example of a scientific-management approach is the work of John P. Kotter advocating a standardized set of stages and tools to lead change (Kotter,

1998, 2008). Social cognition theorists describe how individuals construct their environment, make sense of it, and connect with the organization. In this perspective, people's perceptions of the organization create the reality in which they live, thus shaping their ability or desire to change to resolve a sense of cognitive dissonance. Because of this, among other factors, social cognition theory suggests prescriptive templates such as Kotter's cannot effect transformative change (Kezar & Eckel, 2002). Scientific management strategies, such as strategic planning and steering committees, can enact visible, first-order change at high levels. However significant cultural change requires social cognition strategies, such as altering paradigms and creating new mental models, to enact the deeper second-order change in individual mindsets needed to truly transform an organization and sustain the change (Kezar, 2014). The interplay of these two perspectives thus supports a premise of structural contingency theory: organizations are slow to adapt to changes in the external environment because managers attempting to enact change face an uphill struggle, causing them to satisfice with an acceptable, incremental degree of change.

In 2007 Deanna de Zilwa conducted a study of 112 academic units that supports the application of structural contingency theory and its connection to sociology theories in higher education. The units responded to the environmental changes in different ways linked to their cultural norms and heterogeneity, and only adapted when those changes had pushed them "far from equilibrium" (de Zilwa, 2007 p. 571) or in the language of structural contingency theory, when they were out of fit with their environment. The social norms and entrepreneurial actors shaped the change to the point necessary to recover equilibrium, or in other words, they satisficed.

How Integrated Planning Assures Transformative Change

Incremental change is fostered in an institution when unit leaders are not integrated in their planning practices. They plan change within the limits of bounded rationality: what they know, what they can influence, and what time is available. Their efforts are further limited by cultural norms and institutional entrepreneurs who operate toward their own interests. The unit leaders can only do what they can to achieve an acceptable level of incremental change. Integrated planning expands the boundaries by incorporating additional information and perspectives. Even if institutional leaders can see the entire landscape of environmental change and unit planning efforts, institutional entrepreneurs and cultural norms perpetuate internal counterforces driving unit leaders to satisfice.

To be successful, a transformative change effort must be larger than the counterforces. Unit planning toward incremental change must be aligned to reach a transformative level. The actors of the institution as a whole must recognize the need for change and embrace the integrated planning practices into a new normal that connects them toward a common purpose. To embrace these practices, they must understand the practices and be prepared for the outcomes. And all of these elements must be implemented in a sustainable and ongoing manner or the interests of stability and conformity will overcome them once again. This is the definition of integrated planning: a sustainable approach that aligns the organization, builds relationships, and prepares for change.

But... how? While the principles are comprehensible at the 30,000-foot level, in a meeting of faculty and administrators at ground level it's hard to know where to start. Two models are available to operationalize integrated planning: academic program prioritization already practiced in higher education and its cousin organizational portfolio management practiced in corporate industry. The disciplines grew up in parallel with striking similarities yet practitioners in either field were unaware of their cousin's existence. I propose a blended framework bringing together the best of both worlds to use as an operational model of integrated planning for higher education. First I will introduce each of the parallel disciplines, then present the blended version.

Organizational Portfolio Management from Corporate Industry

Organizational portfolio management views all the assets of an organization—human resources, finances, facilities, and any others—as a portfolio of investments to be continually managed in alignment with strategic objectives. It is based on Markowitz's economic portfolio theory that won a Nobel prize in 1990 (Markowitz, 1990). While economic portfolio theory was intended to guide management of financial investment portfolios, the principles have been transferred to other applications and industries, including commercial corporations (Donaldson, 2000), the biopharmaceutical industry (Reginato, 2005), global non-profits (Miljkovic, 2006), information technology (Kumar et al., 2008; Project Management Institute, 2008), facilities management (Daigneau, 2010), and, hypothetically, the academic programs of higher education (Harper, 2011).

The fundamental principle of economic portfolio theory is that investors diversify their holdings to reduce the risk of uncertainty. According to the now-global standard of

Portfolio Management (Project Management Institute, 2008; Rad & Levin, 2006; Reginato, 2005), mature organizations intake, evaluate, select, and prioritize projects to align funding with strategic objectives. They then continually monitor and recalibrate the portfolio the same way an investor does with a financial portfolio, balancing risk and reward. Organizational Portfolio Management takes it one step further, looking not just at the proposed new projects of the organization, but also including all existing programs, operational activities and resources of the organization itself as the portfolio (Hossenlopp, 2010). In this way it more closely aligns with program prioritization, which is also designed to comprehensively evaluate all the programs and activities of the institution at the same time.

Program Prioritization Applied in Higher Education

Program prioritization was introduced in the late 1990s, when Robert C. Dickeson (Dickeson, 1999, 2010) published his recommended practice on the prioritization of academic and administrative programs, which largely used the same principles as portfolio management. In the Dickeson model, institutional constituents collaborate in developing a set of criteria by which to evaluate all academic and administrative programs. They then make decisions to augment, decrease, or eliminate resource allocation for individual programs in alignment with strategic objectives. Program prioritization has been viewed with a controversial eye by some institutions but has been successfully implemented by others when the recommended methods were carefully followed. Although Dickeson advocates the use of program prioritization on a continual basis, most institutions have viewed it as a one-time or potentially repeatable exercise of

necessity but not a continual practice. Dickeson also advocates a transparent, inclusive and collaborative decision-making process that works well where adhered to; of a sample of 20 institutions, those that operated in a more closed or opaque process had less positive outcomes (Milkovich, 2013).

Portfolio Management and Program Prioritization Compared

Both corporate portfolio management and higher education program prioritization are integrated planning disciplines calling for comprehensive review of resources in alignment with strategic planning. Those resources include human personnel and staffing plans, budget planning and funding sources, facilities management and IT investment management, among the most common. But as disciplines arising in different sectors, they also differ in significant ways.

First, as the organizational portfolio must be maintained and continually recalibrated, it is always implemented as a continual practice; conversely, program prioritization is usually implemented as a one-time solution to a problem, potentially to be repeated in the future but only if needed.

Second, and most obvious, is that program prioritization is applied to academic programs, which traditionally can take years to put in place and are rarely closed. If closed, that exercise usually takes just as long. While corporations also have programs with long start-up and close-out requirements, they tend to have less durable programs as well, which are easier to reduce or discontinue to realign the resources.

Third, portfolio management aligns programs and their associated resources with strategic priorities and in practice that results in some programs being prioritized over

others. Balance is the emphasis, however, and not prioritization. Because the portfolio is continually recalibrated, and because strategic priorities are expected to change, the balance is expected to change. Programs that were a low priority could become a high priority at any time. Balance and realignment are viewed as reasonable business logic; whereas, in the academic world of equality, the emphasis, and in fact the very word *prioritization*, implies that some programs could be labeled *unimportant*. Every program is important to somebody and every somebody has a program important to them, so any implication of *unimportant* is a challenge to the cultural norm. And so, where programs are difficult to start or stop, are often led by highly specialized faculty, and are each important to somebody, realignment of resources is not viewed as reasonable business logic but as institutional anathema.

Those three differences in combination help to explain why program prioritization in higher education is often resisted and portfolio management in corporate industry is usually not. Yet program prioritization is specially designed to apply to higher education where portfolio management does not take into consideration the nuances of academic programs and institutional cultures. The framework I propose as *institutional portfolio management* combines the best of these worlds.

The Framework of Institutional Portfolio Management

Institutional portfolio management integrates strategic planning, program assessment, budget and resource planning, and applies the integrated plan to the existing assets and proposed investments of academic and administrative programs in institutions of higher education. Program performance is continually measured and analyzed; new

programs are evaluated for their potential to meet institutional goals and performance objectives. When new programs are added, whether academic or administrative, resources are redistributed within the portfolio to accommodate the new program with the intent of maintaining or improving overall performance. It is a continuous process of integrated management.

The process begins with strategic planning to establish the vision for the institution's future and the goals necessary to achieve it. As the ultimate goal is to align resources to strategic objectives and improve performance outcomes, the strategic objectives and desired outcomes must be established first. The institution as a whole must know what its future should look like, what its competitive advantage is, and what its performance metrics should be so that integrated planning has a clearly known target.

The process is informed by a comprehensive assessment of all academic and administrative programs. The existing assessment practice of the institution is thus incorporated into the planning process, the primary distinctions being that all programs are assessed simultaneously using the same criteria, and incorporating costs and resource uses such as staffing, technology, and facilities. In portfolio management, the criteria are often summarized in categories of cost, benefit, risk, and strategic alignment. Dickeson's model proposes a base set of ten criteria more appropriately elaborated for a higher education setting. For this step to be successful, each institution must develop the criteria appropriate to its mission, values, and culture and must do so in a transparent, inclusive, and collaborative manner involving or led by faculty and staff.

The process is applied by reviewing all program assessments to determine which programs most closely align, either directly or indirectly, with strategic objectives, with

what investment requirements, and with what probable return on the investment. Let's look at each piece of that application.

Alignment: A program might directly align with strategic objectives when it is clearly tied to a future goal, such as a new engineering program at a school relying on its engineering reputation for competitive advantage. A program might indirectly align with strategic objectives when it is a service program essential to all engineering programs. Those could include a mathematics program with few majors, a composition program that teaches technical writing with no majors, a humanities course that develops critical thinking, or a program of historic value to the institution for any reason. Indirect alignment also includes administrative programs that are essential to the operation of the institution.

Investment: Each program requires investment of faculty, staff, funding, technology, and space. Planners must understand the level of investment required for each program to maintain its current performance and to reach any future performance goals. This is a touch point of integrated planning, where formerly disparate planning processes and data need to be interwoven. Institutional information systems do not always allocate resources such as personnel, technology, and facilities on a program basis, it is more often aggregated by resource type. Planners will likely need to develop analytical models to approximate resource usage.

Return: Understanding return on investment in higher education is not a quantitative exercise as it is in corporate industry. The benefits of academic programs to society and the mission of the institution is far more qualitative in nature. Nevertheless, there is still a finite availability of resources to allocate. The institution needs to think

through the alignment of the program compared to the investment required. A simple understanding of high or low alignment and high or low investment will be informative. The probability of success is also a part of the return analysis, particularly for programs requiring additional investment to achieve goals. Probable return is a balance of reward and risk.

While planners inform the portfolio with integrated information, it is up to institutional leaders to make decisions about resource allocation according to the culture of the organization. Where a strong culture of shared governance exists, shared governance should participate or lead portfolio decisions. Where an institution is strongly supported by alumni donors or has heavily engaged board members, those groups should also participate. The sociology and relationships within the institution must be honored and incorporated into the decision process in order to sustain it and prepare the culture for transformative change.

Portfolio calibration means that programs are continually (that is, perhaps annually or biannually) considered for resource allocation. That could include sustaining, augmenting or reducing resources, adding new programs, or eliminating programs over time. Resource allocation in turn informs budget planning, technology planning, and facilities planning. When new programs are added or existing programs augmented, the resources must come from somewhere in the portfolio, requiring recalibration by collecting, reducing or eliminating somewhere else. Additional resources can be collected, for example, when increased revenue is realized and allocated to selected programs or when efficiency gains are found in administrative programs. Ongoing calibration also involves continually monitoring and predicting changing environmental

demands and adapting institutional strategies, which in turn influences changing goals and subsequent resource redistribution in a continuous cycle.

The Sum of the Parts is Greater than the Whole

Institutional portfolio management is an ongoing process that is both informed by integrated planning data and in turn drives integrated planning in response to portfolio decisions. The framework operationalizes the definition of integrated planning as a sustainable approach that relies on and builds relationships within the institution, aligns resources with strategic objectives, and prepares the culture for change through a transparent and inclusive process. Integrated planning prevents incremental unit-level successes from slowing transformative institutional change, enabling institutions to incorporate and achieve performance goals and satisfy stakeholders. All of this is done persistently and in slow motion, rather than reactively. Institutional portfolio management intentionally and continually maintains alignment of resources with strategic objectives to achieve high performance in relation to external pressures.

CHAPTER SIX

INSTITUTIONAL PORTFOLIO MANAGEMENT: IMPLEMENTING A
FRAMEWORK TO IMPROVE INSTITUTIONAL PERFORMANCE

Contribution of Authors and Co-Authors

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INSTITUTIONAL PORTFOLIO MANAGEMENT: IMPLEMENTING A FRAMEWORK TO IMPROVE INSTITUTIONAL PERFORMANCE

Abstract

Institutions of higher education are under pressure to demonstrate improvement in performance metrics, such as graduation rates. To be effective and valued strategic partners, Chief Information Officers and technology leaders should educate themselves on the political and economic challenges their institutions face. Even better than coming to the table with knowledge is to come to the table with solutions that will help improve institutional performance. In this article I summarize the political and economic landscape of higher education today and present a new framework of Institutional Portfolio Management, borrowing from the best practices of strategic management in higher education and private industry. The future for all institutional leaders is to address those performance metrics. IT leaders who understand the parallels and can apply the framework have an opportunity to guide their institutional leaders in demonstrating performance improvement. In this article I provide practical principles, guidelines, techniques and tools of institutional portfolio management. I also provide a fictitious case study based on my knowledge of applied program prioritization and my personal experience as a practitioner of portfolio management.

INSTITUTIONAL PORTFOLIO MANAGEMENT: IMPLEMENTING A FRAMEWORK TO IMPROVE INSTITUTIONAL PERFORMANCE

Introduction

In today's era of increased funding pressure, public scrutiny, and performance expectations, institutions of higher education face new challenges that compel them to undertake new practices toward improved institutional performance. As Chief Information Officers increasingly become strategic partners at the leadership table, it behooves them to be educated in the political and economic challenges facing the institution, not just the technological challenges. Even better than coming to the table with knowledge is to come to the table with solutions that will help improve institutional performance. In this article I point out similar challenges and practices from higher education and private-sector industry and present a combined framework borrowing from the best of both. IT practitioners might recognize the *triple-constraint* challenge and *portfolio-management* techniques from their own experience, and be surprised to learn the same exist in parallel form in the academies of higher education. Armed with the knowledge and the practical framework I elaborate in this article technology leaders will be better prepared as the institutional leaders of the future.

The Challenges

In 2006 the United States Department of Education released what is commonly referred to as the Spellings Report but is formally titled "A Test of Leadership: Charting the Future of U.S. Higher Education" (United States Department of Education, 2006).

The Spellings Report acknowledged higher education as one of America's greatest success stories and a world model but also called upon it to improve performance in critical areas of access, cost and affordability, financial aid, learning, transparency and accountability, and innovation. No small charge.

The National Center for Public Policy and Higher Education responded with a report titled "The Iron Triangle: College Presidents Talk about Cost, Quality, and Access" (Immerwahr et al., 2008), having interviewed over two dozen presidents from a variety of higher education institutions to add their perspective to the public dialog. The presidents describe the competing demands for reduced cost, maintained quality, and increased access as being in a reciprocal relationship they refer to as the *iron triangle*, wherein a change in one causes an inverse change in another. For example, reducing costs requires that an institution either sacrifice quality, such as with a higher student-to-faculty ratio, or decrease access, such as by offering less support to disadvantaged students making it harder for them to complete. Increasing accessibility to a wider range of students increases costs through additional faculty, additional marketing campaigns, and additional support services (Daniel et al., 2009; Immerwahr et al., 2008). More, better, cheaper—each one takes from another. If you want more, you either have to spend more or decrease quality. If you want better, you either have to spend more or push through fewer units. If you want cheaper, you either have to push through fewer units or reduce quality. In technology, units might be function points in a software program; in higher education, units are our students.

The three-point iron triangle of cost, quality, and access in higher education bears a striking resemblance to the triple constraint of cost, quality, and time in the discipline of

project and portfolio management (Project Management Institute, 2008; Rad & Levin, 2006). Both access and time refer in a sense to productivity or throughput, where providing access to a wider volume of students yields greater throughput of graduates and where longer time in a development schedule yields greater throughput of product. As in the iron triangle, making a change to one of the triple constraints creates a reciprocal change in another. For example, increasing throughput, e.g. speed of delivery, or increasing quality, e.g. features incorporated into the product, increases cost. To reduce costs you must either sacrifice quality, for example with fewer function points, or decrease speed, for example by reducing the number of people working on the project (Project Management Institute, 2008; Rad & Levin, 2006). While it's possible to realize efficiency gains that increase throughput without increasing cost, those gains are typically found in manufacturing environments or routine operations, not in industries that rely on highly educated, touch-intensive labor such as healthcare and education (Archibald & Feldman, 2010). In these industries, the same rule holds—more, better, cheaper—each one takes from another—but efficiency innovations are not easily realized.

Today's era of increased pressure to improve institutional performance is not new, although the intensity may be greater today than in bygone eras, as all five of "Porter's Five Forces" in the higher-education sector are changing simultaneously (Gumport, 2007). The changes in industry forces manifest for higher education as: a) society shifting toward a view of higher education as an individual benefit rather than a social good, believing the expense should be borne by the individual and not the state; b) legislatures less inclined to fund higher education as a result of social pressures and less able to fund higher education as a result of fiscal pressures, e) for-profit institutions increasing in

number and competitiveness, d) enrollments widening, adding increased pressure on institutional infrastructure; e) the student demographic shifting away from the traditional post high-school four-year experience to a profile of older working adults or more transient students who stop and start or come and go among schools; f) distance education breaking down geographic boundaries and expanding the competitor base from which students can select an institution (Birnbaum, 1988; Duderstadt & Womack, 2003; Eckel, 2002).

The Solutions

Both higher education and private-sector industry have experimented with or fully adopted solutions to the pressures they face. As institutions have faced reduced financial support from state allocations or private donors and endowments, they have often cut their budgets in an across-the-board method, each unit contributing its proportional share. It's not strategic, since you're cutting the good along with the bad indiscriminately, but it's simple, "fair," and easy to explain to internal stakeholders. Some institutions have attempted a more strategic approach of program prioritization, which evaluates all academic programs and administrative services and reallocates resources in alignment with strategic objectives (Dickeson, 1999, 2010; Milkovich, 2013, 2016). The practice of program prioritization in higher education has a parallel practice of portfolio management in private industry (Milkovich, 2016). Both serve to align limited resources with strategic objectives by intentionally allocating those resources among the organization's collection of programs. Both offer strengths to capitalize on in a combined framework, as described below.

About Portfolio Management

Portfolio management treats all operational programs as a collection of investments that should be evaluated *in comparison with each other* through a pre-defined set of cost-benefit-risk-alignment criteria. Organizational resources, e.g. funding, physical assets, and human time and effort, are then allocated in alignment with strategic objectives. A high-priority program may be augmented with additional resources while a lower priority program sees its resources reduced or eliminated (Kumar et al., 2008). A change in market conditions or environmental context may suggest a change in the portfolio mix to recalibrate the resource allocation, the risk-reward balance, the strategic emphasis, or to pursue new opportunities. It is an ongoing process, not a one-time fix. Portfolio management has been applied in multiple disciplines, such as electrical engineering, biopharmaceuticals, global non-profits, information technology, and facilities management, and incorporates a variety of organizational assets, such as human resources, facilities space, equipment, and funding (Daigneau, 2010; Donaldson, 2000; Harper, 2011; Miljkovic, 2006; Reginato, 2005). Success of this approach in improving corporate profits and share value is evidenced in the growing field of portfolio management now gaining a foothold in professional organizations such as ISACA and the Project Management Institute, even evolving to a formal standard (ISACA, 2012; Project Management Institute, 2008).

SIDEBAR: Although related, portfolio management differs from project management or program management. Project management delivers a defined output within the prescribed time, budget, and scope. A project can be successfully executed even if it's an unneeded project—you can cut down the trees really well, but still be in the wrong forest. Program management

delivers the intended benefits of an outcome, defining projects and balancing the resources that have been allocated in the process. Program management makes sure you're sent to the right forest. Portfolio management encompasses both program and project management, focusing on the selection of programs and allocating resources to achieve strategic objectives. Portfolio management makes sure that cutting down forests is the right business to be in, compared to other opportunities to achieve the mission.

About Program Prioritization

Program prioritization treats academic programs and administrative services as a collection of investments that should be evaluated *in comparison with each other* through a pre-defined set of criteria. Institutional resources, e.g. funding, physical assets, and human time and effort, are then allocated in alignment with strategic objectives. A high-priority program may be augmented with additional resources while a lower priority program sees its resources reduced or eliminated (Dickeson, 1999, 2010). A change in market conditions or environmental context may suggest a new program to pursue and thus require a change in the resource allocation of the existing program mix. A program may be maintained for many reasons not readily apparent; for example, although a program does not directly align with the institutional mission, e.g. it is not a science program in a STEM land-grant, it could be a sustaining service to those that do, e.g. it is an English program that fulfills undergraduate education. Just like in technology, an investment may not directly align with institutional mission, e.g. it is a network security service, but it is a sustaining service to the overall operation of the campus. Program prioritization has been used by institutions to achieve quality recognition awards, add faculty lines and new programs, and open new colleges, in addition to absorbing dramatic

budget cuts (Milkovich, 2013). Program prioritization is not without its critics. Just the word *prioritization* is inflammatory to some, implying that some programs could be more important than others. Although Dickeson's model calls for a highly inclusive and transparent process, inclusive and transparent are still open to interpretation and have been applied differently with different results, not always favorably viewed by the academy. While recommended as an ongoing process, program prioritization has often been applied as a one-time solution (Milkovich, 2013), reinforcing suspicions that it is reactive in nature.

Framework for Institutional Portfolio Management

Blending the best practices from each field into a framework of *institutional portfolio management* has the potential to create a powerful tool in support of institutional performance improvement (Milkovich, 2016). Although known by different terms, both practices rely on common elements of: a) governance of the portfolio and prioritization process by a group of stakeholders; b) predefined criteria to evaluate, select, and prioritize programs within the portfolio; c) use of criteria that address cost, value, and alignment to mission objectives; d) incorporation of other organizational plans, such as strategic and financial plans; and e) adaptation of common practices to the culture and characteristics of the organization (Cope & Delaney, 1991; Dickeson, 2010; Harper, 2013; Project Management Institute, 2008; Rad & Levin, 2006). Primary differences are that program prioritization emphasizes a transparent and inclusive process to develop the criteria of evaluation; portfolio management emphasizes an ongoing process of continual re-balancing. Combining the best practices of both in a new framework that emphasizes

transparency and inclusivity as well as continuity and balance offers institutional leaders a standard for guiding institutional performance improvement. I elaborate these points and explain the framework in the following sections.

Foundational Elements

Foundational elements are features that should be included in some way, shape, or form for the framework to be successfully implemented. They might also be called *critical success factors*—those things that must happen for the initiative to succeed.

1. Evaluation criteria are developed through an inclusive and transparent process incorporating shared governance appropriate to the culture of the institution.
2. All existing programs are assessed according to the evaluation criteria.
3. Program resources are aligned according to institutional objectives: augmented, reduced, or eliminated as needed.
4. Performance of the overall program portfolio is continually reviewed.
5. New programs are evaluated for their potential to meet institutional objectives.
6. When new programs are added, whether academic or administrative, the portfolio is reviewed and resources are redistributed to accommodate the new program with the intent of maintaining or improving overall performance.

7. Strategic planning and financial planning are incorporated into program planning.
8. Environmental demands and constraints are continually monitored and forecasted, e.g. changes in demographics, public support, or funding sources.
9. Institutional goals and strategies are adapted in response to changing conditions.
10. Goals, process, outcomes, and overall performance are continually assessed and communicated.

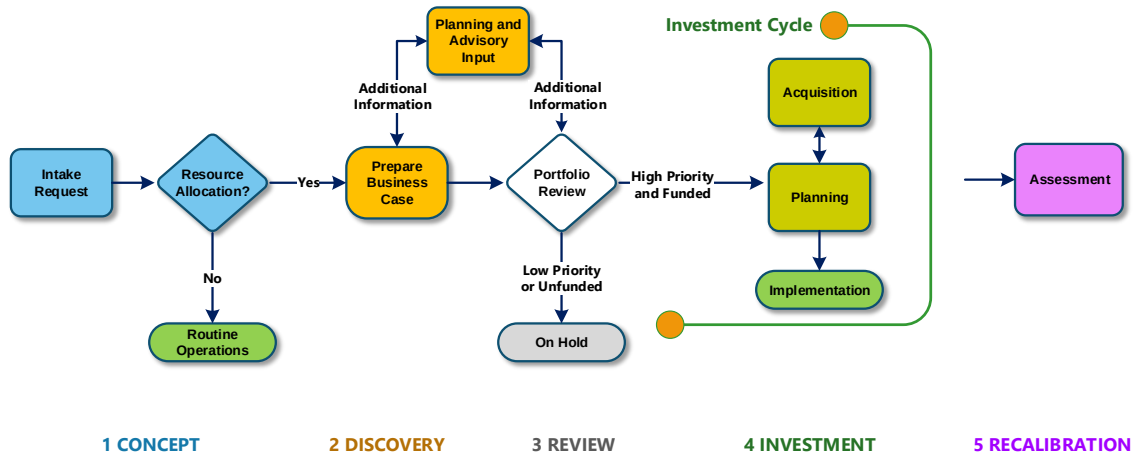
All of this is done persistently and methodically, rather than reactively.

Institutional portfolio management thereby intentionally and continually maintains alignment of resources with strategic objectives to demonstrate and maintain high performance in relation to institutional goals and external pressures.

Process Overview

Figure 1 illustrates a process map of institutional portfolio management. At the heart of the process is ongoing portfolio review that can be conducted on a regular schedule and/or when information triggers a review, such as a revised strategic plan, financial plan, or changing environmental conditions. A review is also triggered when a new investment is proposed, i.e. a new academic or administrative program. New investments should move through the process in a stage-gate model, only proceeding to the next stage upon clearance from the prior stage, described below.

Figure 1. Institutional Portfolio Management Process



1 Concept. A requester proposes a new investment. The portfolio manager “intakes” the request, collecting minimal essential information, enough to conceptualize whether it can be absorbed within routine operations or requires resource reallocation. If it requires resource reallocation, it must go into Discovery to gather additional information. Governance must clear any advancement into Discovery, as the information gathering process requires time and effort, which is therefore drained from other investments.

2 Discovery. For a new intake, if resource allocation is required a business case is developed using the pre-defined institutional criteria. As part of this process, Subject Matter Experts or other advisors are consulted for needed information. Budget and financial plans, strategic plans, and environmental scans are also sources of information. When sufficient information has been compiled, the business case can be cleared to move to the Portfolio Review stage.

3 Review. With necessary information compiled, the existing portfolio is reviewed to determine whether the proposed investment has the potential to improve overall performance compared to other programs and opportunities. The portfolio reviewers are appointed according to the culture of the institution, including executives and governance representatives as appropriate. If the proposed investment is adopted, resources within the portfolio must be realigned to accommodate it—the money has to come from somewhere. Once funded, the proposed investment enters the portfolio as a new program.

4 Investment. In the investment cycle, a new project or program is planned, developed and/or acquired according to standard practices, then executed along with the rest of the portfolio.

5 Recalibration. A new proposed investment is a trigger to review and recalibrate the portfolio by realigning resources. Any additional information could also trigger a review, such as a revised strategic plan, a new budgeting cycle, or new market information. Even without new information, the portfolio should be regularly reviewed, at least annually, to assess opportunities for improvement.

Evaluation Criteria

Dickeson (2010) suggests an initial set of ten criteria to evaluate programs, which institutions can consider and adapt to their own needs. Those criteria are briefly summarized below; for more in-depth explanation, refer to Dickeson's work.

1. History, development, expectations. Why was the program developed? Is it meeting its original intent and/or has it changed to adapt to changing needs?
2. External demand. What do national statistics indicate is the present and future demand of students and society for this program? It's important not to be reactive to shifting whims, such as an increase in demand for criminal forensics shortly following the introduction of a new popular television crime series. At the same time, it's also important to understand regional and national long-term needs supported by evidence.
3. Internal demand. Many academic programs do not host many majors or minors but do act as a critical service program to others, which should be taken into account.
4. Quality of inputs. Inputs are the faculty, technologies, students, funding and other resources that support a program. Inputs are relatively easy to measure and are often used as a proxy for program quality.
5. Quality of outcomes. Outcomes are the measures of effectiveness of a program and are much harder to evaluate than inputs. Recent trends in program assessment are driving the field more toward evaluation of outcomes, such as measuring learning outcomes or placement into careers or graduate programs.

6. Size, scope, productivity. This criterion is a look at volume and ratios to support it. How many students pass through the program? What is the ratio of faculty to students and the ratio of staff to faculty in the department? What is the density of faculty specialists or the ratio of tenure to non-tenure?
7. Revenue. Some programs bring in additional revenue to the institution, through enrollments but also through research grants, donor gifts, fees, ticket sales or other sources. Service programs can also be viewed as subsidies for a net comparison.
8. Costs. What are the relevant, direct and indirect, costs of a program? What additional costs would be needed to achieve performance goals for the program or what efficiencies could be realized with same or less investment?
9. Impact. This criterion is a broad narrative of the positive effect the program has on the institution or the negative effect if the program were reduced or discontinued. Any information about the program that is important to understand in consideration of its future can be included here.
10. Opportunity analysis. This final criterion is a consideration of new opportunities for the institution. What else should the institution be pursuing that it isn't already, or how could it be doing things differently to better effect?

Business Case

A business case involves an analysis of cost, benefit, risk, and alignment to objectives, with varying interpretations. Some define “business case” as a statement of benefit in a larger analysis of benefit, cost, and risk; some define the business case as the entire analysis. In any interpretation of a business case, cost is typically quantifiable where benefit and alignment are qualitative and risk is a combination of quantitative and qualitative. For purposes of an institutional portfolio management framework, business case is defined as the complete analysis of cost, benefit, risk, and alignment, as defined below.

Cost = a quantitative analysis of the upfront and ongoing costs of an investment. Costs include time and effort (labor) associated with the program, regardless of where the salary and benefits are paid from, as well as purchases. Upfront and ongoing costs are usually reported separately so that decision makers can see the initial outlay required as well as the annual commitment.

Benefit = a narrative description of the benefits the institution will realize through the program. Although it’s theoretically possible to quantify an expected return on investment as a benefit, in reality it’s a pretty sophisticated organization that can do that with any validity. A narrative description is effective for most audiences, without the management system becoming larger than the outcome it manages.

Risk = a combination of quantitative and qualitative analysis of probable risks and outcomes. Program risk in a technical organization is usually assessed in terms of the probability of an event or outcome occurring, expressed in a percentage, and the cost of impact if the event or outcome does occur, expressed in currency. Multiplying the

probability times the impact, or the percentage times the currency, results in a risk score. But in spite of its seemingly quantifiable precision, the original estimate of probability and the original estimate of cost are still qualitative, albeit highly educated, guesses. The best approach is to show the quantitative math along with a qualitative narrative to explain the impacts. Program risk is not normally associated with academic program review or new academic program proposals. Present or future lack of interest in a program by prospective students or employers does constitute a risk to academic program success, as well as high overhead to provision or sustain operations compared to marginal interest among stakeholders.

Alignment = a narrative describing how the program addresses strategic institutional objectives. Objectives can be explicitly published in a strategic plan or deduced from common knowledge, i.e. the strategic plan developed a few years ago doesn't necessarily speak to operating more efficiently, but we know in the current climate that increased efficiency is an emphasis.

A cost-benefit-risk-alignment analysis gives a comprehensive picture to decision makers of how a program contributes to the institution as well as how it consumes resources of the institution. Dickeson's ten criteria of program prioritization correlate with the business case criteria of portfolio management, as I categorize in *Table 1*. Dickeson's list of criteria provide a more detailed explanation of information that should be included in a cost-benefit-risk-alignment analysis, which is just a different and more generalized way of grouping the same vital information. Some of the program criteria could be matched to more than one portfolio criterion, there are multiple ways to slice and dice. Table 1 illustrates one alignment.

Table 1. Comparison of Portfolio Management and Program Prioritization Criteria.

Portfolio Criteria	Program Criteria	Rationale
Cost	8. Costs	Costs include time and effort of faculty, staff, and administration as well as space and other expenses. Revenue offsets cost and should be considered as part of the analysis. Costs needed to improve a program should also be considered.
	6. Size, scope, productivity	Like revenue, size and productivity of the program could outweigh the costs with a net positive effect. A low-productivity program does not mean the program is struggling; different disciplines have different productivity scales.
	10. Opportunity analysis	Opportunity “cost” is the loss to the institution of other alignment opportunities not realized because of the investment in this program.
Benefit	1. History, development, expectations	A program may have historical or other value to an institution that does not necessarily align with strategic objectives; that doesn’t mean the institution wants to discard all other benefits.
	2. External demand	External demand is a benefit to the institution as it indicates positive attraction and attention by constituents.
	7. Revenue	A low-revenue program does not mean the program is not important or should be cut. Revenue potential varies with discipline. Should also be considered as part of cost.
Risk	4. Quality of inputs	Low-quality inputs indicate a program is at risk, as low-quality inputs are more likely to generate low-quality outcomes.
	5. Quality of outcomes	Low-quality outcomes indicate a program is struggling, and therefore a risk to the overall success of the institution.
Alignment	3. Internal demand	A program may be a service program to other programs, making it essential to the university and therefore in alignment with objectives, even though it does not itself attract any external attention. Could also be considered as part of benefit.
	9. Impact	This is a catch-all criterion to incorporate any information that doesn’t fit in one of the other criteria. Should also be considered as part of benefit.

The criteria are intended to provoke thought, be comprehensive, and be adapted to individual institutions. The process for developing criteria is as-important as the criteria themselves and should be inclusive (everyone is included in the process and decision-making, even if only in some representative manner) and transparent (everyone knows how decisions are made and what the decisions are). All programs, academic and administrative, must be evaluated by a set of criteria developed in advance. Some institutions have chosen to use different criteria for academic versus administrative

programs. Certainly some of the more specific criteria do not apply to administrative programs, such as revenue or external demand or historical value. An administrative program such as “Payroll Processing” or “IT Network” will score zero points in any of those criteria, but certainly score very high on internal demand and impact. The criteria are intended to inform decision-making, not become a mathematical substitute for human judgment. Administrative programs can be evaluated separately from academic programs, but at the end of the process, decisions must be made that distribute limited resources among all programs. An example of a business case template is provided in Appendix A.

Scoring Rubric

A scoring rubric can be used with any set of criteria. Like an academic grading rubric, it describes the characteristics that achieve a score for a given criterion. When evaluating something as complex as competing program investments, decision makers should not rely solely on a scoring rubric, the scores are merely informative. The value is as much in defining what low, medium, and high look like for each criterion. Defining the outcomes in writing, in advance, helps everyone understand what the outcomes might look like and improves inter-rater reliability. One method to develop a rubric is to define only the maximum possible outcome, then when applying the rubric score each candidate according to how close it comes using a Likert scale. An example of a scoring rubric is provided in Appendix B. Another method is to define high, medium, and low outcomes and assign the category. The format doesn’t matter; the rubric can be a descriptive document or a spreadsheet. The scale does not need to be evenly spaced, in fact, a

nonlinear scale may be easier to use, such as only offering Low, Medium, and Very High. This reduces the tendency to cluster programs in the middle.

Some guiding principles to keep in mind when using scoring rubrics:

Keep it open. The process of developing a scoring rubric is as important as the results of its use. For the results to be trusted the process must be trusted, therefore the process must be transparent and inclusive.

Keep it simple. Resist any temptation to develop a sophisticated or highly precise rubric. No matter how precise or quantitative the analysis appears, most criteria are still based on qualitative information and professional judgment; precision is an illusion.

Keep it positive. Define everything in the positive form to avoid pole confusion. For example, *High* or 5 when applied to a positive criterion such as *Overall Benefit* is clearly positive. When applied to a criterion such as *Risk*, is *High Risk* good or bad? One way to address that is to try to get everyone to remember that when talking about risk, *High* or 5 is bad. Alternatively, rephrase *Risk* as a positive *Probability of Success* so the scoring poles remain aligned in the same direction.

In the following fictitious example, I present a case study of a university implementing institutional portfolio management. The story is compiled from my interviews of 20 university presidents and provosts who implemented program prioritization and my own experience implementing portfolio management at two different universities.

The Story of Waters State University

Waters State University is a comprehensive university in the upper Midwest. It serves the region's population of primarily traditional-age first-generation students, with undergraduate programs in liberal studies, education, business, and nursing, numerous master's programs, and a few recently opened doctoral programs. As with many of the public institutions in the Midwest, Waters U has struggled with a decreasing population of high school students and repeated cuts to their state allocation. In spite of the challenges and their declining enrollments, Waters has maintained high academic quality, launched an innovative general studies program, and built up a reputation for sustainability research.

In recent years, Waters State University hired Dr. Anthony Gofortt as Chancellor following the retirement of the previous, long-standing and well-regarded Chancellor. Chancellor Gofortt had ambitious ideas to advance the unsung quality of the institution to a position of national renown but the severity of the budget cuts brought into stark reality the necessity of finding alternative means. Chancellor Gofortt launched a new strategic planning initiative, led by Provost Lance Wynnns, as he investigated solutions to his resource problems.

As the strategic plan began taking shape, priorities emerged to increase diversity, expand academic programs in technology, sustain the widely-acclaimed general studies program, and pursue the highest-possible national ranking for sustainability research and campus practices. But the institution had still not found a way to fund any of the priorities. Over dinner with colleagues at a national conference, Chancellor Gofortt

shared his worries with his old friend Akeem Bashar, who told him of a newly proposed framework that might be useful to him, called Institutional Portfolio Management.

Akeem also gave him the contact information for the author and well-regarded scholar in the field, Dr. Antonia Williams.

Setting the Stage

Over the phone, Chancellor Gofortt and Dr. Williams discussed a consulting engagement for Antonia to assist Waters U with their Institutional Portfolio Management (IPM) initiative. Antonia explained to the Chancellor that she has studied in this area for years but this is a new framework that has not been completely tested. She was looking for a university to pilot it and participate as a case study. The Chancellor agreed to the opportunity and listened carefully to Antonia's high-level plan of action.

Antonia arrived for the first of many campus visits to hold a workshop on IPM for all faculty, staff, administrators. The Chancellor kicked it off to explain why the campus community needs to do things differently, and the opportunity to participate in a newly developed practical framework for intentionally managing institutional performance metrics. Antonia explained how IPM works, emphasizing inclusivity, transparency, and balance, and the firm belief that the campus must define and manage the process; she was there only as a facilitator and guide-on-the-side.

To start, Antonia asked the audience what values the institution holds dear, and what groups should be involved in any large-scale change effort. As the audience shared ideas, Antonia recorded them, displaying her notes on the large screen that was also streamed to office desks for staff and faculty who couldn't break away for the event. The

audience suggested a Steering Committee with wide representation from shared governance and all constituents. A volunteer monitored the remote participants to collect their viewpoints as well. With feedback collected and the campus community apprised of the coming initiative, the Provost worked on convening the Steering Committee and Antonia returned home to polish up the plan before vetting with the Steering Committee, at their first of many weekly video-conference meetings. Over the next several months, Antonia guided and supported the Steering Committee through the steps listed and described below, engaging a grad student to help with scribing and scheduling, and the university IT team to help with digital document sharing and remote tech support.

Communications

The first thing the Steering Committee did was to appoint a Communications Team, with expert support from the Marketing & Communications department (“Marcomm”). The Comm Team planned their communications to include a web site, weekly news updates posted on the web and pushed through email, a rumor hotline, and a series of scheduled press releases. With Marcomm’s input, they quickly realized the promotional value of the initiative in demonstrating to the board and legislature the proactive, transformative, and strategic approach the university was taking through the IPM initiative. The Chancellor and Antonia, along with the university’s Chief Communications Officer, held a conference call with the board, explaining the initiative and the expected outcomes. The board responded with cautious optimism.

Process Design

Next, the Steering Committee appointed a Process Team to design and lead the process. Antonia coached the process team about the sociology of change in higher education that would be useful to understand and provided resources for learning. She noted it was especially important to “get down to the DNA of the organization” to achieve transformative change. To succeed, individuals needed to construct new ways of thinking about the institution, in the face of a new reality. A top-down only process would not endure. While the Process Team got started, the Steering Committee researched and selected institutional performance metrics to use post-process to demonstrate the long-term results of their transformative change to constituents, board, and legislature.

The Process Team decided on two separate teams to gather information and evaluate academic programs and administrative programs, to be merged eventually. They believed faculty should lead both teams to keep the emphasis on academic quality, whether directly through academic programs or indirectly through administrative support programs. They also made sure that staff were widely represented on both teams, then decided to convene the teams to help design the process.

The expanded Process Team decided on a single set of general evaluation criteria for both teams, finally deciding on Alignment, Value, and Risk as it would be easier to merge the two sets in the end, but each one was detailed differently for academic versus administrative programs. As they worked, the Process Team members each continually checked in with constituents, sharing their progress and incorporating feedback.

The Process Team moved on to develop a workflow for both the academic and administrative Process Teams: Discover (gather information), Assess (categorize the programs according to the information), Reallocate (make decisions about the programs), and Evaluate (determine and report on the success of the process and the outcomes).

The first challenge for the Process Team was to determine what constitutes a program. Certainly it meant every major, minor, certificate, or other official stamp of academic completion, but what about classes that served multiple majors without being a distinctive major themselves? And what about administrative programs—was HR one program or should it be broken into multiple programs such as one for Recruiting and one for Compensation? They discovered as much art as science to this part of the process and developed lists that they vetted with constituents until everyone was fairly comfortable with the programs named. They made sure to include new programs suggested by the priorities of the strategic plan.

The second challenge for the Process Team was to identify the information they would need about each program to make informed decisions. This is where it became important to distinguish between academic and administrative programs. Even though the general criteria were the same—Cost, Benefit/Alignment, and Probability of Success—how that was detailed differed between the two. For example, historical value was often a benefit of an academic program but had little meaning for administrative programs, although administrative programs might have strong alignment to strategic priorities, such as student diversity. Each team developed a glossary to define the general criteria for their purposes, then worked with Institutional Research (IR) and the Finance office to confirm they would be able to obtain the information needed. In some cases, the effort to

obtain desired information was too burdensome and they selected proxy information instead. For example, determining what it cost for each program to use the campus network was impractical to calculate, so the total cost of network operations was estimated, then divided and attributed to the program based on headcount.

As the Process Team developed and vetted the process, there were many debates about the kinds of information needed and the lack of easily-obtained but meaningful data. Constituents realized that stark decisions would be made based on the data provided, so the data included became politicized and polarizing. The Chancellor and the Provost realized that constituents were getting bogged down in data debates and had to move on, somehow. The Steering Committee suggested consensus ground rules: 1) You won't always agree, so 2) Can you support it? Or, 3) Can you live with it? 4) Because, we have to find a way to live together, inclusive of our disagreements. The ground rules helped move everyone along.

Finally, the Process Team published the process design and started the academic and administrative teams down the path.

Discover

As forewarned by IR, the biggest challenge was getting reliable data: the information system wasn't designed to keep track of the kind of program-level information they needed. It became a struggle for the IR office to find and prepare data in a usable format. The process teams and the IR office lost time in the schedule but persevered, helped by a few Happy Hours commiserating over the suddenly-legacy

information systems and the need for higher education to develop more robust business intelligence.

To help with the discovery, each program was assigned a program manager to shepherd the program through the process, someone who was not affiliated with the program but understood it. The program manager was responsible for keeping the program information vetted, updated, public, and on track, always working closely with the program affiliates. For each program they included the current costs, space, and technologies needed to operate the program, as well as the additional resources needed to reach goals, if any.

Assess

After six challenging months, the university had an inventory of programs and information compiled in a web-hosted database constructed by their IT team, on short notice. Guided by Antonia throughout that time, the Steering Committee monitored and reported progress to the Chancellor's cabinet and the Comm Team kept campus updated on progress.

To start the Assessment phase, the academic and administrative process teams categorized the programs in investment buckets: Invest, Maintain, Reduce, Eliminate. The Steering Committee decided that a new team should be created to run the assessment, also led by faculty with broad representation, but now including some external stakeholders to give input into regional strategic needs for higher education.

The Assessment Team combined the academic and administrative programs and ran the calculations to find out how much money could be saved by eliminating or reducing programs. Was it enough to cover maintaining and investing?

Nope. Disappointed that their work would be harder, but not at all surprised, they belatedly realized that cash flow mattered, that programs couldn't be eliminated or even reduced overnight, and that new programs would start up slowly with uneven investment rates. Following on that thread of hope, the Assessment Team asked the program managers to develop rudimentary cash-flow statements, after getting the Finance department to create a simple template for them. They also asked the program managers to develop a Reduction Plan and an Elimination Plan outlining the steps they would take if the program was reduced or eliminated, no more than a one-page statement. Maybe that would inform the cash-flow statements, or indicate something that could be outsourced. The program managers and program affiliates were not happy with that request, referring to the plans as the Suffer or Die Plans. Ouch.

Antonia came back onto the frontline, visiting campus for a couple weeks to help in person. She met with numerous constituents, listening to their concerns, and thinking about ways to address those concerns and help those constituents through an admittedly challenging process. She reflected that it was the secret mission of every organizational unit—corporation, department, troop, or tribe—to preserve the organizational unit. That proved no different among program units in higher education. Whether strategic or not, units did not want to lose their unit-hood. How could she help this university overcome this dilemma?

Antonia advised the Assessment Team to create some What-If scenarios, experimenting with investing in fewer programs, reducing some maintained programs, eliminating more programs, to come up with a few different scenarios that they thought, although still painful, would be still reasonable. They did so, and published the scenarios to campus, then convened multiple campus-wide meetings to explain them.

Following those sessions, they gathered input by holding a *charrette*, with each scenario visually and descriptively portrayed on a poster. The campus community was invited to attend and vote for scenarios with stickers or comment using post-it notes. The Steering Committee, Discovery and Assessment Teams staffed the charrette for over a week, answering questions and collecting feedback. They summarized and published the feedback, and made adjustments to the scenarios based on the information collected.

Then they held ANOTHER charrette and did the same all over again, this time with fewer scenarios. One of the scenarios was “Do-Nothing”, eliminating no programs but also making no new investments. The campus seemed pretty evenly divided among the three remaining scenarios.

Reallocate

The Steering Committee convened and realized they needed a way to make the final call. After much discussion and several meetings, they convenee a campus town-hall session and explained the dilemma and the need for a decision strategy to choose the final path. They offered three general decision strategies: 1) The Chancellor and his cabinet could choose the scenario; 2) The campus could vote on the scenario with the decision

going to a probable plurality rather than a majority; 3) they could bring outside stakeholders, such as legislators, board members, or consultants, to make the decision.

At this moment, Faculty Senate leader Mark Sparks jumped up to make an impassioned speech, saying in sum: external parties don't understand higher education and should not control our destiny; and a campus vote will result in only a plurality and not a majority, meaning the majority will be dissatisfied. Then, as uncharacteristic as it was for Dr. Sparks, he pointed out that we hired the Chancellor to lead us through difficult times. The Chancellor has executed an unusually participatory and evidence-based decision process, for which he should be commended. We have gone through a comprehensive strategic planning process to take us into the future, grim as it financially may be. We have no choice but to make cuts and at least through this process we have all had a voice in the decisions. There is no ideal scenario acceptable to all until the legislature turns over (get your vote out!) but at least each scenario is acceptable to many. It's the Chancellor's job to make the final decision with the advice of his trusted colleagues. With that, the campus town hall ended, and Antonia wondered intensely what the final decision would be.

Deeply concerned with the weight of the pending decision, the Chancellor spoke with each of his cabinet members in private to get their input; like the campus community, they also disagreed on the best scenario. Seeking counsel, the Chancellor called his old friend and mentor Akeem Bashar. Wisely, Akeem does not give him answers but asks him question after question. Finally, he says, "Trust in the process, my friend. You have done well to reach this point. Because of the process, any decision you make is as good as a decision can be."

With renewed confidence, the Chancellor announced his decision the following day. The Finance department began the tedious process of redesigning budgets in response; the Facilities and IT departments stared at their previous strategic plans and accepted that they must change their entire orientation from expense categories to program alignment; while the program managers looked glumly at their Reduction and Elimination Plans, filled with self-doubt over their previous assertions that seemed so hypothetical at the time but now were reality. In spite of the exhaustively inclusive and transparent process, surprised constituents, who somehow thought it could not possibly apply to them, flooded the Chancellor's office and inbox with their concerns. The Comm Team, with Marcomm advice and support, jumped into action with messaging both internal and external.

Evaluate

Over the din of reaction to the Chancellor's decision, the Steering Committee convened an Evaluation Team to design and execute evaluation of the process and the outcomes, which Antonia stressed were two different things. The Evaluation Team developed a survey to assess constituent satisfaction with the process and their perception of its effectiveness. The team then developed a plan for recurring review and recalibration of the portfolio of programs, in a scaled-down process that would update the program information, goals, and requirements, as well as the budget, technology, and space plans. They asked Finance, IT and Facilities to develop their strategic plans oriented to the portfolio of programs and the evaluation schedule, which was likewise aligned with the strategic plan. As part of the evaluation plan, they incorporated annual

review of the institutional performance metrics selected at the beginning of the process. As was now customary on campus, they vetted and published the annual evaluation plan. The wheels were now in motion for ongoing evaluation and management of the institutional portfolio.

Reflections

Some months later at a national conference, over dinner with the Chancellor and his friend Akeem Bashir, Antonia reflected on the process and all that she had learned from it, noting the adaptations that the team had developed to make it work for their culture. She thanked Anthony for the opportunity to work with Shields University as her case study. Anthony, in turn, was delighted with the outcome and shared his hopes that The Process, as they had come to call it, would help institutions of higher education break the iron triangle with intention and positive effect. Said Akeem, raising his glass with a smile, “That’s right, my friends. Trust in the process.”

Conclusion

Pressure to demonstrate improved institutional performance will not decrease anytime soon. Other industries face similar constraints and pressures and have taken dramatic steps to address performance and satisfy stakeholders. The stakeholders of higher education may not be satisfied until they see similar transformative change in our institutions. Simply demonstrating intentional improvement management enables institutions of higher education to better articulate their mission and demonstrate value and better management.

But the objectives demanded—improved, access, cost, and quality—are in conflict with one another. To increase one requires a reciprocal decrease in another. The best strategy is to recognize the competing objectives, choose the right balance for the institution, and manage resources accordingly. Institutional portfolio management is a framework that could facilitate that endeavor as an effective strategy to address immediate expectations and break the cycle of fragmentation and realignment that heretofore has been seemingly beyond control of institutional leadership. Setting goals in the context of public expectations and demonstrating effective management toward those goals will illustrate both the constraints and the performance of the institution within those constraints. Technology leaders who understand the challenges facing institutions of higher education, who recognize the confluence of portfolio management and program prioritization, and who understand how to apply the best practices of each, can support their institution in demonstration of continuous performance improvement.

APPENDIX A: Business Case Template

<i>[Enter Program Name]</i>			
OVERVIEW			
Program Manager		Last Updated	
Email		Phone	
College		Dean	
Department		Chair	
ALIGNMENT (Benefit)			
History	<i>[Describe the history, development, or expectations of the program]</i>		
Strategic Objectives	☐ Strategic Priority One ☐ Strategic Priority Three ☐ Strategic Priority Two ☐ Strategic Priority Four		
External Demand	<i>[Describe the external demand for the program]</i>		
Internal Demand	<i>[Describe the internal demand for the program]</i>		
Impact	<i>[What other positive impact does the program bring to the institution?]</i>		
VALUE (Cost-Effectiveness)			
Faculty Time	<i>[Describe the faculty time needed by this program.]</i>	<i>[enter FTE]</i>	<i>[enter cost]</i>
Staff Time	<i>[Describe the staff time needed by this program.]</i>	<i>[enter FTE]</i>	<i>[enter cost]</i>
Administrator Time	<i>[Describe the administrator time needed by this program.]</i>	<i>[enter FTE]</i>	<i>[enter cost]</i>
Technology Costs	<i>[Describe the equipment and staffing needed by this program.]</i>	<i>[enter FTE]</i>	<i>[enter cost]</i>
Space Costs	<i>[Describe the space needed by this program.]</i>	<i>[enter SqFt]</i>	<i>[enter cost]</i>
Operations Costs	<i>[Describe other general operations costs needed by this program.]</i>		<i>[enter cost]</i>
Revenue	<i>[Describe the revenue generated by this program.]</i>		<i>[enter rev]</i>
Productivity	<i>[Describe the productivity of this program.]</i>		<i>[enter ratio]</i>
Opportunity	<i>[Describe the opportunity alternative to this program.]</i>		<i>[enter net]</i>
RISK (Probability of Success)			
Quality of Inputs	<i>[Describe the quality of inputs relative to comparable programs.]</i>		
Quality of Outputs	<i>[Describe the quality of outputs relative to comparable programs.]</i>		
INVESTMENT (Goals)			
Program Goals	<i>[Describe the goals this program aspires to.]</i>		
Additional Investment	<i>[Describe the investment needed to achieve goals.]</i>		<i>[enter cost]</i>
SUMMARY	Alignment	0%	Cost 0%
	Risk	0%	Investment 0%

APPENDIX B: Scoring Rubric Template

[Enter Program Name]		
CATEGORY	OBJECTIVE	VALUE
ALIGNMENT (Benefit)		0%
History	Program has high historical value to the institution.	0
Strategic Objectives	Program directly addresses all strategic objectives.	0
External Demand	Program attracts high demand from external constituents.	0
Internal Demand	Program has high internal demand from a majority of other programs.	0
Impact	Program has high impact on the values, traditions, and meaning of the institution.	0
VALUE (Cost-Effectiveness)		0%
Faculty Time	Cost of faculty time is low.	0
Staff Time	Cost of staff time is low.	0
Administrator Time	Cost of administrator time is low.	0
Operations Costs	Cost of operations is low.	0
Space Costs	Cost of space is low.	0
Technology Costs	Cost of technology is low.	0
Productivity	Productivity of outputs to inputs is high.	0
Revenue	Ratio of revenue to cost is high.	0
Opportunity	Opportunity cost is low.	0
PROBABILITY OF SUCCESS (Risk)		0%
Quality of Inputs	Quality of inputs is high compared to comparable programs.	0
Quality of Outputs	Quality of outputs is high compared to comparable programs.	0
INVESTMENT		0%
Program Goals	Programs goals are aspirational and doable.	0
Additional Investment	Additional investment required to meet goals is low.	0

CHAPTER SEVEN

CONCLUSION

“...Therefore my merchandise makes me not sad.”
(William Shakespeare, Merchant of Venice,
Act I, Scene I)

The Merchant of Venice was astutely managing his portfolio of goods to prevent a crisis and weather a storm. As a result, when stormy seas reduced his means, he was not saddened—he knew the secrets of portfolio management. Institutions of higher education also face stormy seas, and have throughout history, perhaps now more than ever. I submit to my colleagues and the body of knowledge that the best practices of program prioritization and the best practices of portfolio management, when combined in a blended framework of institutional portfolio management, will enable institutions to escape the reactive cycle of fragmentation and contraction. It is a transformative change that can demonstrate and support continual improvement of institutional performance in ways heretofore not seen.

Unique Contributions

This dissertation offers multiple unique contributions to the study of higher education:

1. Application of Structural Contingency Theory to explain the pattern and pace of change in higher education.

Structural Contingency Theory spans a range of sociological theories and studies of organizational change in higher education that ground it in extant

literature, as presented here. It explains how organizational managers “satisfice” with incremental change rather than undertake a larger-scale effort of transformative change, allowing institutional performance to degrade. This contribution builds on the work of numerous scholars studying the sociology of change in higher education, namely researchers Tierney (Tierney, 2008) and Kezar, by illustrating how that sociology both improves and impedes institutional performance. It improves, by preserving the values and durability of academic freedom and quality; it impedes, by slowing the sometimes-needed transformative change. Structural contingency theory applied to higher education, as I have done with this contribution, helps practitioners both leverage and overcome those sociologies. It also builds on the work of scholars studying the economics of higher education, through the development and study of resource dependence theory (Burton R. Clark, 2008; Burton R. Clark, 2008/1966; Pfeffer & Salancik, 2003), revenue theory (Bowen, 1980), and cost disease theory (Archibald & Feldman, 2008a, 2008b, 2010), by pulling those theories together to explain the entire cycle through structural contingency theory. And perhaps most importantly, it extends the work of the venerable Alfred Chandler (A. D. J. Chandler, 1977) who developed Structural Contingency Theory in the context of strategic business management, by applying it to the new context of higher education.

2. Empirically-based insight into the institutional characteristics and the drivers, process, and outcomes of program prioritization from the perspectives of institutional leaders.

This insight informs scholars of the characteristics of institutions that initiate program prioritization at greater frequency than the general population. It also informs practitioners of the relationship between a strategic approach, a transparent and inclusive process, and positive outcomes.

This contribution builds on the work of scholars and practitioners in the field of program prioritization. It provides empirical support for the work of Dickeson's original development of program prioritization (Dickeson, 1999, 2010) by empirically demonstrating that *process* has an effect on *outcome*. It also builds on my earlier development of the theory of mission fragmentation, by demonstrating that institutions with a broad and comprehensive mission are more prone to the undertaking of a dramatic intervention such as program prioritization to provide a solution (Milkovich, 2015).

3. Illustration of parallel challenges and practices in higher education and private-sector industry.

Teaching and research are not manufacturing and a university is not a business. However, the administration of an institution of higher education bears similarity to the management of a large industrial organization. Lessons from either sector can inform the other. The iron triangle and the triple constraint both illustrate the conflicting demands for improvement wherein a change to one of the corners causes an inverse reaction in another. Program

prioritization and portfolio management are solutions that evolved in parallel, each bringing unique strengths.

This contribution extends the understanding of the performance limitation of the iron triangle (Immerwahr et al., 2008) by comparing it to the business limitation of the triple constraint (Project Management Institute, 2008; Rad & Levin, 2006). Although the sectors of private industry and higher education are very different, they both face the realities of physical law. Better, faster, cheaper—choose two out of three, because each change in one creates an inverse change in another. Recognizing that this applies to all industries helps each industry cope and prevail.

4. Development of an improved framework of institutional portfolio management that combines the best practices of program prioritization and portfolio management.

Combining the strengths of these two practices creates a framework of integrated planning that institutional leaders can use to navigate the shifting winds of public expectations and the ebbing tide of societal support.

This contribution builds on the development by Dickeson of program prioritization in higher education (Dickeson, 2010, 2013) as well as the development of portfolio management in private industry (Project Management Institute, 2008, 2013; Rad & Levin, 2006; Reginato, 2005) by illustrating how we can extrapolate lessons learned from each to be applied to a different sector.

And not the least of these, I offer the illumination of references to portfolio theory by William Shakespeare in *The Merchant of Venice*, nearly 400 years before Harry M. Markowitz formally published the theory. Markowitz knew full well that Shakespeare predated him and even credited him accordingly in his work (Markowitz, 1999) so this contribution is not unique, but still a noteworthy addition.

Implications and Recommendations

With transformation comes power over one's destiny, but the change is not easy. Structural contingency theory illustrates the difficulty of making any transformative endogenous change and the slow adaptation of institutions of higher education to any exogenous change. Our stakeholders simply may not be satisfied until they see large-scale change in the administration of higher education. For an institution to take control of the cycle of fragmentation and achieve the transformative change currently demanded requires institutional leaders to chart new courses. For that they need a map, and I propose that institutional portfolio management is that map.

The contributions of this map present positive implications for institutional leaders and practitioners:

- Institutional leaders can demonstrate they are implementing transformative change to expectant stakeholders. Even though results will take time to emerge, leaders can communicate to their boards, legislatures, and the general public that they are taking dramatic steps to better administer institutional resources in alignment with strategic objectives, with the specific intent of improving institutional performance. Although dramatic, the steps they are

taking are based on rational processes that incorporate the strengths of both academia and private-sector management.

- Institutional leaders can recognize barriers to change through the lens of structural contingency theory. Structural contingency theory ties together a number of sociological and organizational theories and presents a complete visual picture to help institutional leaders and practitioners understand the complex interplay of change and culture. Understanding the natural tendency for unit leaders to satisfice can help institutional leaders overcome that paradoxical obstacle.
- Unit leaders can recognize when they are satisficing and understand the paradox of incremental success. Unit leaders are focused on survival of the unit and the delivery of its mission. It's not an easy message to hear that your unit's success and survival is not paramount. Knowing that this is a studied phenomenon and not an arbitrary whim or pop management du jour will help.
- Although the prospect of program reduction or elimination still looms, faculty may take some comfort in the emphasis on academic quality, institutional values, and other qualitative factors beyond simply cost or graduation rates. They may also appreciate the participatory nature of the process, the emphasis on balance and continuity, and the reliance on faculty leadership.
- Practitioners, whether institutional leaders, faculty and staff, or consulting practitioners, have a practical roadmap to follow. Running an organizational intervention such as institutional portfolio management is typically not an arrow in the skillset quiver of most faculty or staff. Practical guidance, tools

and techniques can lend valuable support to the effort, whether or not professional expertise is brought in.

The pilot study presented in Chapter Three illustrates in more detail the implications of certain approaches and practices and their relationship with successful outcomes, as reported by institutional leaders who have undertaken academic program prioritization. The manuscript in Chapter Six also elaborates practical guidelines or recommendations. Some high-level recommendations that are evident or deducible from those manuscripts or the above implications bear emphasizing:

- Begin the initiative before you reach crisis point. True, a real and present danger will create a valuable sense of urgency, without which it may be difficult to galvanize action sufficient to overcome the inevitable resistance. While imminent danger is useful, waiting until you're in the thick of a crisis will not allow time for the process to be inclusive and transparent.
- The process must be inclusive and transparent. Inclusive and transparent are not the same. Inclusive means that a wide array and large contingent of faculty and staff engage in the process from beginning to end. Transparent means that everyone knows what the process is, where they're at in the process, where to find information, how decisions will be made (before they are made) and what the final decisions are. Many a failed effort was transparent after-the-fact, sharing decisions that had been made. Not good enough.
- Faculty and staff, and shared governance where appropriate, must have leadership roles in the process. One of the great powers of higher education

over corporate management is the collective esprit de corps of the community, of all-for-one and one-for-all. Administrators might facilitate and shepherd the process, but should be recognized in that role and not as decision leaders.

- Consider professional support. The process takes work: organizing, coordinating, scheduling, note-taking, summarizing, programming and other administrative chores. Where administrators, faculty, or staff do not have time or expertise, or where administrators cannot easily take a back-seat to the process, a contracted professional with experience in the process can provide valuable support from an indisputably neutral position.

Limitations

The work of this dissertation builds on extant literature in the study of higher education but otherwise embarks into relatively uncharted territory. Little research to date has been done specifically on the application of portfolio management and program prioritization in higher education. With broadly new horizons also comes several limitations of the present work.

First, the findings of the study and analysis contained in this dissertation are largely theory building that need to be sea-tested. I have pulled pieces together from literature and primary research, as well as first-hand experience as a practitioner, but the culminating framework needs to be further studied to provide empirical support for its efficacy. That is the nature of theory building and a solid starting point for further study.

Second, we don't know how different institutional cultures or characteristics might influence the outcomes. In the pilot study, characteristics did not emerge as a

theme from the interviews of institutional leaders, and a variety of institutional types were included. However, one pilot study with an n of 20 is not very conclusive. Relationships likely exist between characteristics such as control and qualities such as top-down culture that could influence outcomes.

Third, without some kind of pre- and post-test analysis, either through a within-subjects design or ideally a difference-in-differences design, we really can't demonstrate efficacy. We can extrapolate *probable* efficacy from the standards and practices in private industry but that does not constitute empirical support in higher education.

Finally, every situation an institution of higher education faces is unique. No two sets of characteristics or circumstances are exactly alike. Only through further research can we develop more robust navigational guides on which institutions may rely.

Future Research

In addition to the recommendations of practical application, and acknowledgement of the limitations of this work, I suggest opportunities for future research. A wealth of opportunity exists to study the application of institutional portfolio management in higher education. Further research is needed to examine, validate, or refute these claims and to continually refine the framework.

Suggested research includes:

- Qualitative studies of organizational change through the lens of structural contingency theory.
- Cross case studies of real institutions applying the framework.
- Action research to test and improve the tools and techniques.

- Quantitative within-sample pre- and post-tests comparing institutional performance metrics of institutions that have applied the framework.
- Quantitative difference-in-differences tests comparing institutional performance metrics of institutions that have applied the framework to institutions of like characteristics and contexts that have not.
- Study of the theory and framework applied to new institutions in developing countries to evaluate efficacy of the framework if it is implemented from the nascence of an institution rather than as a latent sea change.

A Voyage Just Beginning

Portfolio theory, structural contingency theory, portfolio management, and program prioritization have been around for centuries or decades and now are pulled together. The voyage is just beginning as we study application of institutional portfolio management in higher education and its efficacy in planning and executing the performance improvement that our stakeholders demand. A single institution cannot break the iron triangle and yet individual institutions are expected to do so. The solution is to find the right balance of angles and demonstrate effective management overall. Institutional portfolio management is a model to achieve that. I call upon my colleagues to join with me in pursuing greater empirical and practical knowledge to this theoretical foundation.

“Go, presently inquire, and so will I.”
—The Merchant

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