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ABSTRACT: The United States higher education system is the primary source of intellectual capital for the US industrial base. The system is not focused on meeting its primary customer's (the student's) needs, with shortfalls in accessibility, affordability, and accountability that limit students' abilities to prepare for life after graduation (e.g., jobs, graduate school). Higher education policymakers and institutions must incentivize Career Technical Education attendance; align course equivalencies to ease credit transferability; link Common Core State Standards with college entry requirements; proliferate co-requisite coursework; spur states to increase public university funding levels; improve information for customer decision-making; and modernize the accreditation system.

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American Federation of Teachers, Washington, DC
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Field Studies - Domestic
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National Governors Association, Washington, DC
New America Foundation, Washington, DC
Potomac Job Corps Center, Washington, DC
DC KIPP: Key Academy, Washington, DC
Amidon-Bowen Elementary School, Washington, DC
U.S. Senate, Health, Education, Labor and Pensions (HELP) Committee, Washington, DC
Education Trust, Washington, DC

Montgomery County Public Schools, MD
Montgomery College, MD
Maryland Higher Education Commission, MD
Maryland State Department of Education, MD
University of Maryland, College Park, MD

North Virginia Community College, VA
Mountain View Alternative High School, Centreville, VA
George Mason University, Fairfax, VA
Thomas Jefferson High School for Science and Technology, Alexandria, VA

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Massachusetts Institute of Technology, Boston, MA
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Institute of Technical Education, Singapore
National Institute of Education, Singapore
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INTRODUCTION

The United States' (US) role as a global leader depends not only on its superior military and economic strength but also on its education system. Higher education in the US serves as the intellectual capital engine for the US National Security Industrial Base (NSIB).[1] This paper defines higher education providers as institutions that provide career technical education (CTE), two-year, and four-year degrees. Higher education provides opportunities for students to improve their competitiveness for employment after degree completion, with better paying jobs as the primary reason for that vast majority of students' decision to attend college.[2] At its best, the education system produces individuals ready to assume critical positions in the workforce with both foundational knowledge and innovative skills to meet the challenges of the 21st century. Higher education in particular is viewed as the capstone to earlier learning where institutions offer students the training and education modern industry seeks. While the country continues to produce bright, capable graduates each year, inefficiencies exist that prevent the US from fully harnessing the intelligence and skills of its populace. The US higher education system is not focused appropriately on its primary customer (the student) with shortfalls in the 3A's critical to student success: accessibility, affordability, and accountability. These shortfalls limit students' abilities to prepare themselves best for success after graduation from higher education institutions (e.g., jobs, graduate school). This paper starts with a market analysis of higher education, continues with a discussion of challenges and recommendations the system faces, and concludes with deeper discussions regarding the proposed measures for addressing the shortfalls.

THE INDUSTRY DEFINED

Using the principles of Supply Chain Management and Industry Analytics, the Education Industry is defined as a complex system of systems. The US higher education supply chain (see Figure 1) provides students with the requisite skills to secure employment in industry and serve society. Given this demand construct, the student represents the primary customer for the higher education supply chain with industry and society serving as secondary customers. The human capital value stream associated with higher education is centered on Kindergarten through 12th grade (K-12) student preparation to meet the input demands of higher education institutions and their processes for delivering product. When focusing on the higher education system, the imperatives of the demand side include tight tolerances for college and university graduates' skills to support the US job market, economy, and national security. Regrettably, the supply side (K-12) tolerances are more lenient and varied, producing wide-ranging quality levels in the secondary school (high school) graduates that enter the higher education system.

When defining the US higher education market, its buyers (students, also known as customers), suppliers (post-secondary, degree- and certificate-conferring institutions), a distinct good (an accredited post-secondary degree), and rules (federal and state laws and accreditation practices) govern its transactions. Suppliers in this market include public, private, and for-profit degree-granting institutions, which vie for buyers for revenue.[3] The market most closely resembles one of monopolistic competition, because of many suppliers and differentiated offerings; however, its lower ease of entry due to higher capital investment functions more like an oligopoly. Given that society reaps additional benefits above market equilibrium from the students' consumption of the higher education product, the higher education market contains market failure due to a positive externality. Ideally, states and the federal government could

overcome the market failure by subsidizing higher education at a level equivalent to the societal benefit beyond market equilibrium.

In line with Michael Porter's *The Five Competitive Forces That Shape Strategy* model, the US higher education suppliers retain significant power over buyers in the market.[4] The suppliers are differentiated in type (e.g., trade-technical schools, two-year colleges, four-year universities, graduate schools, public, private, and for-profit) and further differentiated through branding (e.g., Ivy League, large research, small liberal arts). Moreover, suppliers adjust overall costs to buyers based factors such as in-state or out-of-state residency, merit-based grants, and credit transfer restrictions without viable substitutes available for the degree pursued within the greater higher education market. Simply put, there is a ceiling to student (buyers) options, as they are subject to their own socio-economic, geographic, and intellectual capability limitations with regard to the institutions (suppliers) they can attend.

The higher education supply chain is defined by three large systems: Human Capital Suppliers, Higher Education, and Customers. Other Key Suppliers contribute to the value stream by providing products and services necessary for Human Capital Suppliers, Higher Education, and Customers to operate efficiently and effectively. Although these Other Key Suppliers play irreplaceable enabling roles, their influence is limited primarily to operational efficiencies. This paper does not examine these enablers further, instead focusing on actionable recommendations to address higher education market failures and inefficiencies in the supply chain.

Human Capital Suppliers

K-12 school systems represent the human capital supply source in the higher education supply chain. Students are provided to the Higher Education system from a variety of secondary school options. Public, private, charter, and magnet schools are most common, with on-line and home schooling growing in popularity. Other options include alternative, job corps, and General Education Development programs. These entities are influenced heavily by local constituencies and funded principally through state and local appropriations. Federal contributions to this segment of the supply chain amount to approximately ten percent of K-12 funding, focused primarily on socioeconomic equity.[5]

The diversity of human capital suppliers, constituents, and funding levels produces outcomes with significant variability. Although some high school graduates are college-ready, as defined by the higher education segment, others require some level of remedial coursework before proceeding to degree qualifying courses. Remediation creates inefficiency in the higher education supply chain because students do not receive degree-granting course credit. Students taking remediation courses are delayed in degree attainment and are burdened with additional tuition, book, and other fee costs.

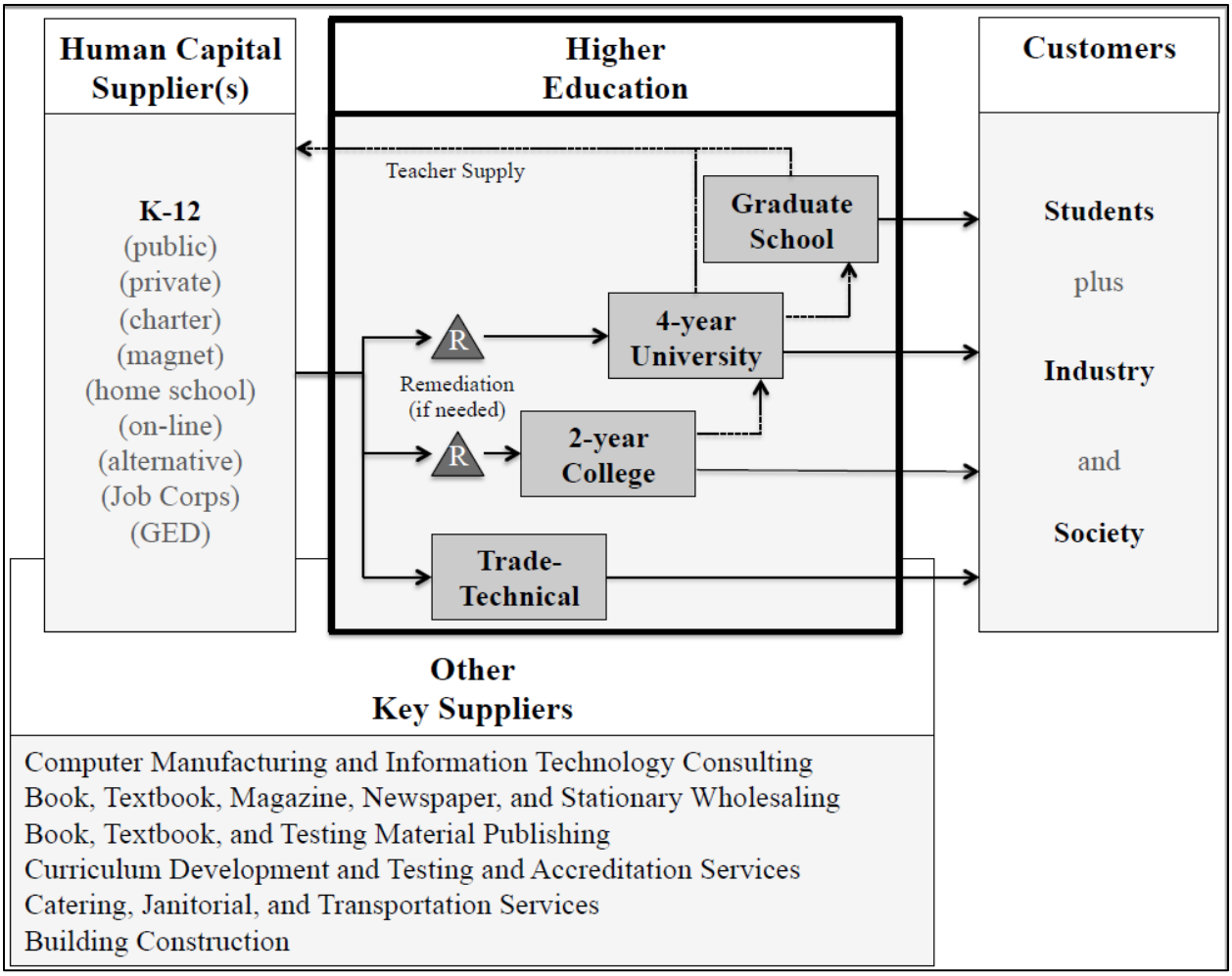

Figure 1. Higher Education Supply Chain

Higher Education

The Higher Education system provides students with professional certifications and accredited undergraduate and graduate degrees to succeed in industry and society. The system offers a variety of disciplines including services, trade, technical, business, professional, sciences, technology, and humanities.[6] Tuition and the conferring of certificates and degrees generate revenue for the higher education institutions. The output to primary and secondary customers, based upon measures available today, varies primarily based on qualitative factors. These qualitative judgments represent an information asymmetry and do not reflect the type of information best suited to assist students in making rational marketplace decisions about which institution will provide them the best opportunities post-graduation. Often customers will favor one school over another because of prestige, brand name, or readily-available data (e.g., class size, instructor reputation) and not on graduate outcomes. A higher education supply chain inefficiency arises as students experience an expectation disconnect from expense outlays, incurred debt, and desired employment.

Higher education not only provides industry and society with students possessing post-secondary education, but also provides the teaching corps for the human capital value stream. Failing to adequately select and prepare teachers contributes to the lack of student readiness for

higher education and represents supply chain inefficiency, creating re-work in the human capital value stream. In countries where students outperform the US in Program for International Student Assessment testing, higher education institutions recruit teacher candidates from the top third of the college going population, where the majority of US candidates come from the bottom half.[7] Only 11 percent of elementary and 47 percent of secondary education teacher programs in the US provide adequate subject preparation for future teachers.[8]

Additionally, integration lacks between Human Capital Suppliers and Higher Education. Several factors account for the differences in college readiness among students; however, most of the disparity is tied to curricula inconsistencies state-to-state, non-uniform standards and testing, and variability in the quality of teachers.

Customers

The primary customer of US higher education is the student. In a market economy like the US, students enjoy the freedom to choose their primary course of study and level of educational attainment, in pursuit of their desired occupation. Students are also free to pursue higher education institutions of their choice, pending admission requirements. Although industry levies skilled labor demands within the economy, students are not restricted to pursue only those careers in need. This condition can create a supply chain inefficiency as a result of the mismatch between graduate skills and job market needs. A lack of jobs does not exist in the US; instead, a lack of skills in the right disciplines is the problem du jour.[9] The mismatch can force students to seek employment outside their educational discipline.[10] Industry still benefits from hiring an educated worker; however, the inefficiency manifests itself in the form of added on-the-job training to bridge the skills gap. Regardless of the process inefficiencies, society should benefit from the positive externalities produced from a higher educated population.

This section framed the higher education industry in the context of a supply chain and described the higher education marketplace. Approaching US higher education from these two perspectives provides for a more objective and instructive methodology to analyze the current conditions, identify shortfalls, and develop recommendations for improvement.

THE CURRENT CONDITION

Higher education in the US is a complex, multi-layer system with institutions spanning the spectrum from open-access, two-year community colleges to highly-selective, elite four-year institutions. Education institutions can be categorized as public or private intuitions and profit or not-for-profit classifications. Private higher education institutions are those entities owned and operated by the private sector, while public institutions are those established, supported, and controlled by a governmental agency, most often a state-level of authority.[11] "Key differences exist between private and public institutions that affect budgeting in critical ways. Such differences include governance, governmental support, student tuition and fees, student financial aid, constituent support, and accounting regulations."[12] Every institution plays a unique role in the education marketplace, and customers/students across the spectrum engage with the system at different, and sometimes, multiple levels.[13]

IPEDS Data (2012-13)	Students (Millions)	Institutions	Grouped
2-Public	6.968	662	1607
4-Public	13.407	945	
2-Private-For Profit	0.311	662	1418
4-Private-For Profit	1.344	756	
2-Private-Not-For-Profit	0.032	95	1654
4-Private-Not-For-Profit	3.941	1560	
Other	0.028	47	47
Total	**26.031**	**4726**	**4726**

Table 1. Student Attendance Totals at Higher Education Institutions (from the Integrated Postsecondary Education System (IPEDS))[14]

Current State of Higher Education Accessibility

Table 1 presents an overview of the distribution of student attendance across the various types of higher education institutions. Public institutions account for approximately 80 percent of all student attendance, with four-year public institutions responsible for meeting the needs of over half the customer base. With these large percentages in mind, it is clear to see that public institutions provide the largest target for higher education improvement efforts.

The demographics of students who comprise these data sets have changed since the turn of the century. From 2002 to 2012, the percentage of 18- to 24-year-olds enrolled in college rose from 37 percent in 2002 to 41 percent in 2012.[15] Additionally, the National Center of Education Statistics projects the rate of increase in attendance for students under 25 to be 12 percent compared with 20 percent for students 25 and older.[16] Furthermore, viewing enrollment from a gender-based perspective presents insights into factors the higher education system must address. Since 1988, the number of females in graduate programs has exceeded males; between 2002 and 2012, the number of full-time male graduate students increased by 28 percent while the number of full-time female graduate students increased by 42 percent.[17] The minority higher education participation rate has increased significantly in the last 40 years. From 1976 to 2012, the percentage of Hispanic students rose from 4 percent to 15 percent, the percentage of Asian/Pacific Islander students rose from 2 percent to 6 percent, the percentage of Black students rose from 10 to 15 percent, and the percentage of American Indian/Alaska Native students rose from 0.7 to 0.9 percent.[18] During the same period, the percentage of White students fell from 84 percent to 60 percent.[19]

Trends in Higher Education Affordability

The number of students receiving financial aid is also increasing. The percentage of first-time, full-time undergraduate students at four-year degree-granting institutions receiving financial aid increased from 77.2 percent in 2007-08 to 82.9 percent in 2011-12.[20] Additionally, the annual average net price for undergraduate tuition, room, and board for the 2012–13 academic year

averaged $12,890 at public institutions, $24,430 at private nonprofit institutions, and $21,740 at private for-profit institutions.[21] Furthermore, state government reductions in higher education funding levels exacerbate the students' affordability problem. Since 2008, all but two states reduced funding for higher education.[22] As a result, many higher education institutions have increased tuition costs to cover the lack of state funding, making it less affordable.

Higher Education Accountability to the Customer

Too often quality assessments in higher education are overlooked when institutions and policymakers focus on addressing affordability, accessibility, and higher graduation rates.[23] Accreditation is the process used in the US education system to ensure that higher education institutions meet and maintain minimum standards of quality and integrity regarding academics, administration, and related services.[24] Another issue in the accountability of higher education is that institutions have a stranglehold on data, protecting their seller-based interests in the marketplace. They make available the information they choose to bring in revenue while complying with statutory requirements for reporting data that do not provide students enough granularity to make informed market decisions. This leaves students in an information gap when deciding which degrees to pursue, institutions to attend, and how much to pay for the institution's product.

In sum, the typical higher education student of today is no longer the 18-year-old, recent high school graduate. Instead, the student population has aged. At the same time, most state governments have reduced their share of higher education costs, shifting the burden to the customer. Lastly, higher education accountability measures remain entrenched in the 20th century, with limited focus on how to improve long-term outcome success for the students.

CHALLENGES TO OVERCOME

America's higher education system has some of the most respected colleges and universities in the world.[25] However, there are a number of challenges facing the system. These challenges fall into three general categories: *accessibility*, *affordability*, and *accountability*. There have been a number of studies on specific issues within these categories, including the rising costs of higher education, the skills required of high school graduates to enter higher education institutions, how CTE and community colleges fit into the current system and what role they should fill, how institutions of higher learning are being held accountable, and the disparity that continues to exist in the higher education system. This section provides descriptions of key challenges the higher education industry must overcome to continue providing a useful product for its customer.

Barriers to Students' Access

This paper defines accessibility in higher education as the ability for students to pursue post-secondary programs without unreasonable barriers. Not every high school graduate should expect to attend an Ivy League school, nor should every graduate who attends a four-year institution perceive that pathway as the only option. However, students who choose to pursue the two-year institution as the most appropriate product for their objectives should not have to overcome arbitrary barriers to transferring credits to four-year institutions if their objectives change. Today's higher education environment has far too many obstacles to seamless transfer of

credits between two-year and four-year institutions and among four-year institutions. These accessibility barriers create inefficiencies in the higher education supply chain and create market failure conditions that fall on the backs of the students (customers).

Earning a high school diploma is no longer sufficient for providing graduates the skills necessary to succeed in the workforce or in pursuit of higher education. The bar for workplace success is now significantly higher, requiring skills not achievable through secondary education alone. This condition creates a near imperative to pursue post-secondary education in order to position oneself for individual economic success. With the graduation rate from high school in the US now at over 80 percent, attendance in higher education institutions continues to increase, with about 68 percent of these graduates enrolling. Unfortunately, too often American society narrowly defines post-secondary education as a four-year degree, placing a premium on professional careers and considering them superior to technical careers.

The bias against technical careers in the US even permeates the craftsmen themselves. During a recent visit to a dedicated CTE school, one carpentry teacher, with over twenty years of experience, stated that he did not want his children to follow his path.[26] He preferred they earn a college degree instead. The same issues exist for attendance at community colleges. Despite the vital role community colleges can fulfill for US students, the bias towards a four-year university still exists, with the number of four-year institution students at nearly double that of two-year institutions.[27] Many Americans view professional certificates and associate's degrees with less respect than a bachelor's degree. This perception drives students to enroll in university programs when they are not academically ready, lack internal interest, or simply cannot afford it.

Unsustainable Growth in Higher Education Tuition (Affordability)

An affordable higher education allows students to pursue degrees without having to exceed their financial means (e.g., personal funding, grants, and student loan debt levels manageable upon graduation). Likewise, an affordable higher education provides students a path to a degree without non-value added steps along the way, such as non-credit earning remediation coursework. Unfortunately, these conditions do not exist universally for all students who pursue higher education. Students' shares of the cost of four-year public higher education have increased over 259 percent since 1971, while inflation-adjusted incomes have stagnated over the same period.[28] Also during this time, states have reduced their funding of higher education institutions. This results in transferring the majority of costs for higher education to students. As discussed previously, student enrollment rates have increased. Due to the rising costs and transfer of costs, college students have now amassed more than $1 trillion in student loan debt. The average class of 2015 graduate leaves school with $35,000 of student loan debt. These developments, left unchecked, may result in the average tuition at a public four-year university exceeding the median income within a generation.

At the same time, rising costs for college are making higher education less affordable, the rates of students who enroll in college when they are not college ready is increasing. These students are then required to take remediation classes, increasing the number of classes required and therefore increasing the cost of their education even more. Research has found that students who require remediation when they enter college are less likely to complete a degree than students who do not require remediation.[29] Nearly 60 percent of students entering post-secondary education require remediation today.[30] Our primary and secondary schools must do a better job of graduating students that are prepared for college.

Obstacles to Desired Student Outcomes

Accountability in US higher education addresses the obstacles to improving student outcomes and making information available to customers concerning what comprises the product they are purchasing and how it will best prepare them for success in their chosen post-graduate pathways. Current measures for evaluating and understanding a higher education institution's performance no longer answer the questions students need answered. Today's higher education accountability must allow the student to improve decision-making and compel institutions to focus on creating a quality end product for customers.

In the higher education market, the students bear the brunt of an information gap that hinders their abilities to decide which degrees to pursue, institutions to attend, and how much to pay for the institution's product. Unfortunately, for the students, current data are not readily available in a consumable format. Instead, today's systems require hours of compilation from multiple sources, data reduction, and further analysis, if one has the skills and the will. If all the data were available and readily consumable, the student may still choose to attend a more expensive school or one with a poorer track record for post-degree financial success, but the student's decision would be based upon widely available market data. This challenge for the student favors higher education institutions and allows them to operate in an environment of reduced accountability to their customer.

The second major accountability challenge is the antiquated higher education accreditation system. The traditional college accreditation process has been viewed as an effective instrument to assure and improve the quality of higher education in the US. However, it is regionally organized and lacks a mechanism to assure quality, state-of-the-art higher education, representing a major challenge for the US as it strives to maintain a competitive posture in the globally-connected world.

The 3A's of higher education present challenges to overcome in order to improve the product institutions provide. This section described the *accessibility*, *affordability*, and *accountability* problems in the current system that create inefficiencies in the higher education supply chain.

OUTLOOK

The US higher education industry directly contributes to an educated workforce, which ultimately affects critical sectors of the broader NSIB. In order to ensure the industry is operating at its full potential, we must examine future projections for factors impacting its effectiveness, so policy recommendations can be focused on the most important industry issues. When examining the outlook for higher education, the most important factors can be categorized into three main areas: the higher education customer, economic influences, and quality of higher education.

Customer View (Accessibility)

The demographic map of students entering college is changing dramatically as we look into the future. In its most recent survey, "Knocking at the College Door" reports that 20 to 45 percent of the nation's public high school graduates are projected to be non-White, up by more than 7 percent over the class of 2009.[31] At the same time as these race and ethnic changes are happening, projections indicate the "traditional" college student as a thing of the past. Today's

typical college student is no longer an 18- to 24-year old, full-time, on-campus resident. "Fewer than 20 [percent] of the roughly 20 million college students now enrolled fit this traditional description." [32] The other 80 percent of students are "older, working part-time, and often commuting, either by car or, increasingly, the Internet."[33] Current efforts of higher education institutions and policymakers do not support the creation of the data gathering mechanisms necessary to address this demographic shift. Policymakers and institutional leadership must recognize this trend in order to successfully offer a higher education product that meets their customers' needs and results in the most efficient societal benefit.

Rising tuition costs are a major concern for those seeking a post-secondary education and there is little relief predicted in the future. While some foresee the competition among universities helping to moderate additional tuition increases, there is no firm data to suggest this will adequately address the issue for those contemplating such a large personal investment. As a result, many students choose to begin their college career at more affordable two-year institutions, then transition to a (more expensive) four-year program following successful completion of general education degree requirements. Leaders in two-year institutions have begun responding to this trend by improving dialog between administrations of the two institution types, and working to ensure transition pathways between their curriculums to help minimize/eliminate taking (and paying for) non-value added classes. We must ensure institutional leaders are responding to this trend so students can efficiently take advantage of the economic benefits and be assured of the curriculum connectivity between both institutions.

Also, the perceived value of a college education, or return on investment, is a central consideration for students as they weigh their options as consumers of post-secondary institution offerings. Looking into the future, this issue will become more prominent as tuition costs continue to rise and federal and state funding sources become increasingly scrutinized. Fortunately, this is a trend where we may have an opportunity to shape the national conversation more directly. With the job market vastly different than it was decades ago, a focus on career preparation may be well advised. Simply holding a degree of some manner will no longer be a distinguishable quality amongst the workforce. Policy leaders could help align the supply chain within this industry by bringing together higher education curriculum and career preparation in a consumable method for students and industry, such that individuals could better assess their return on investment for higher education.

The Economic Story (Affordability)

The national economy significantly impacts supply and demand within the higher education industry. While it is difficult to predict with accuracy whether the US economy will continue to expand and prosper, or another recession is on the horizon over the next 10-15 years, we can look at some of the second order effects economic factors have on the higher education industry. Rising tuition costs, the state of student loan programs, and high remediation rates are three important factors affecting that outlook.

National efforts to address the student loan dilemma have yet to make a significant impact on basic issues, such as ill-informed borrowers. In years to come, the impact of student loans on graduation rates and post-education financial solvency are a grave concern. The increasingly interconnected and competitive global landscape in which the US operates make it imperative that affordability not be a barrier to higher education.

Efforts to standardize primary and secondary learning standards through Common Core State Standards (CCSS) have fallen short, due to inconsistent application from state to state and

unfortunately there is no real solution on the horizon to address this issue. Consequently, ill-prepared students enter post-secondary institutions and the second order effect is those students require a significant amount of remediation coursework before beginning a curriculum that counts toward a degree or certification. All of this adds up to increased tuition costs for the student consumer. With remediation rates at an all-time high, something has to be done to better align K-12 curriculum with that which is minimally required to matriculate to an institution of higher learning.

Product Quality (Accountability)

Institutional accreditation continues to be a hot-button issue for consumers, politicians, and policymakers. From a political perspective, just last year Senator Lamar Alexander put forth a white paper on this subject in an attempt to repair and improve the existing accreditation process. While his proposal had many specific recommendations, the overall goal was to redesign and reform accreditation to strengthen the quality of colleges and universities, promote competition and innovation in higher education, and provide accountability to government stakeholders and taxpayers.[34] The response by the higher education community was swift and strong. Because many of his proposals attempt to link Title IV funding eligibility to accreditation metrics, most institutions see this as overstepping federal authority.[35] Higher education leaders feel strongly that accreditors should focus on measuring student learning and educational goals, and the Department of Education (ED) should focus separately on enforcing Title IV eligibility requirements. This issue will continue to plague the higher education industry into the future. The current system of accreditation and available data for evaluation is fragmented and inconsistent and if the customers of higher education continue to depend on it in their decision-making process, it deserves the attention of policymakers to improve it.

While state and federal governments' efforts have attempted to address these and other higher education issues, much remains to be done. The sections below tackle some pressing issues in education today and identify specific policy recommendations intended to shape a better outlook for higher education in the US.

POLICY RECOMMENDATIONS

As articulated earlier, the US higher education system is not focused appropriately on its primary customer (student) with shortfalls in accessibility, affordability, and accountability that limit students' abilities to prepare themselves best for post-secondary education life (e.g., jobs, graduate school). The following policy recommendations provide options for addressing the higher education supply chain inefficiencies.

Accessibility

Two key problems impact students' accessibility to higher education products and create unnecessary barriers to students' willingness to choose two-year higher education providers as a viable pathway to success. CTE should no longer be marketed or viewed as a pathway for students who do not perform well in secondary education systems. Furthermore, state university systems must align course-equivalency agreements in order to streamline credit transferability between two-year and four-year institutions.

Policy Recommendation 1: *Incentivize Career Technical Education*

CTE delivers products for students to acquire skills and credentials that provide immediate industry-relevant, income-earning opportunities upon graduation. State and federal officials must develop policies to incentivize increased enrollment in CTE programs in community colleges. These policies should consider expanded tax incentives for students who choose CTE as their higher education pathway. Furthermore, this will support closing the gap between the skills students acquire through higher education and what industry demands, a net benefit to the US economy.

Policy Recommendation 2: *Align Course Equivalencies to Ease Credit Transferability*

Two-year and four-year public institutions should streamline the process of credit transfer between institutions. Similar to the Singapore model, US students would then more likely view the two-year to four-year approach as a desirable pathway to success.[36] By removing this barrier, states can make two-year institutions a more enticing option for students' initial choice following high school graduation. The federal government should provide short-duration (e.g., three year) grants to states that choose to implement credit alignment programs that remove the existing barriers.

Affordability

The US must systematically address the two major contributing factors to declining affordability for students pursuing higher education. First, misalignment of high school exit criteria (i.e., standards), with higher education entry criteria, leads to waste in the supply chain in the form of remediation coursework that earns no credits toward degrees. Second, decreasing state funding for higher education shifts the cost burden from the states to the students, with students now bearing two-thirds of the associated costs.[37] The following three policy recommendations aim to address these two factors and put the US higher education system on path to improved affordability for the student (the primary customer).

Policy Recommendation 3: *Synchronize Common Core State Standards with Higher Education Entry Requirements*

Remediation increases the cost of a college education. A more consistent application of CCSS is necessary to maximize high school graduate's college and career readiness with the goal of removing remediation waste in the supply chain. These challenges can be overcome by involving professionals from the entire education lifecycle in K-12 curriculum development and by properly aligning secondary education testing to college entrance requirements.

Policy Recommendation 4: *Proliferate Co-requisite Coursework to Address Remediation*

National research estimates show nearly 60 percent of all community college students and 20 percent of students entering a four-year institutions require remediation.[38] To combat this problem, persistent and deliberate feedback from the higher education institutions to the K-12 system is necessary. Also, proliferation of an effective co-requisite remediation course model, similar to the Colorado Community College System, will help to reduce the remediation requirements by providing concurrent remedial support with credit-earning courses.

Policy Recommendations 5: *Mandate Minimum State Funding Levels for Universities*

Controlling tuition costs requires that state funding contributions to colleges and universities be addressed. Specifically, states need to index funding levels to operating costs with

a nationwide floor of no less than 50 percent. This would help stabilize tuition increases. ED must publish compliance data in its higher education scorecard and withhold Title IV federal funds for those states failing to meet the minimum.

Accountability

The US higher education system must be more accountable to its prospective students. Students require additional fidelity and understanding of the product brands available, beyond qualitative factors related to prestige and name recognition. Furthermore, higher education institution accreditation must move to a more continuous assessment approach that measures product quality through objective measures instead of measuring the process of creating the product alone.

Policy Recommendation 6: *Improve Information for Student (Customer) Decision-Making*

In order to provide for the ability to gather and make available an improved set of information for marketplace decision-making, the US Congress needs to update the Higher Education Act, permitting the creation of student unit record systems to support longitudinal tracking. This data, with personally identifiable information removed or masked, will bridge many of the existing information asymmetry obstacles that students today are unable to overcome efficiently. Furthermore, this data must be readily available for students to access, improving greatly on the products available today through College Scorecard or *US News and World Report*.

Policy Recommendation 7: *Update the Accreditation System to Improve Outcomes*

Continuous and centralized oversight of the regional accreditation entities is the clarion call to provide improved accountability in US higher education. The US must transition to an accreditation system with built-in, continual process improvement under the purview of an independent oversight organization. This will force institutions to place a higher priority on customer outcomes, resulting in increased competitiveness for students as they pursue post-graduate objectives.

The following essays explore these seven policy recommendations further, providing additional descriptions of the problems, desired outcomes, and proposed methods for addressing the inefficiencies in the US higher education supply chain.

ESSAYS ON THE MAJOR ISSUES AND RECOMMENDATIONS

Accessibility

The accessibility issues of yesterday are not the same accessibility problems faced by students today.[39] Despite high school graduation rates and higher education enrollments at all-time highs, the US higher education system struggles to produce what the nation needs to be successful.[40] Students choose to attend colleges and universities for a variety of reasons, but mostly because there is a perception in the US and around the world that a bachelor's degree is the best path to financial and career success.[41] Of the 68 percent of high school graduates who pursue higher education, 41 percent enter a four-year program unprepared and either do not graduate or take six years or more to graduate with a bachelor's degree.[42] Despite this effort, the graduate still may not be prepared for a career. In order to balance the system and provide the higher education product US students need, state and federal officials must develop policies to incentivize

increasing the enrollment in CTE programs in community colleges. They must also incentivize closing the skills gap between higher education institutions and industry. This will reduce enrollment in some four-year institutions but will also increase the number of students overall who are pursuing higher education that has the most value for them, which then has a cascading effect on the secondary customers, industry and society. Higher education institutions in the US allow access, but, without focus on the primary customer, "access without completion is a failed hope."[43]

Incentivize Career Technical Education

Today's CTE is not the vocational-technical (vo-tech) education of the past. Vo-tech was geared toward low performing students who had no hope of attending college. Today's CTE spans a host of disciplines and aims to build pathways for students to acquire the skills, credentials, and certifications necessary for career success. CTE not only imparts job skills, but with successful completion of the curriculum, grants a credential that immediately provides the student with proof of demonstrated knowledge in a focused, occupationally-relevant area of instruction.[44] The time required to complete a certification is shorter than traditional degree requirements and costs less, putting graduates to work more quickly with less debt. The CTE product can reduce the fear of less academically-inclined students who may not otherwise continue their education beyond high school.

CTE also provides for more rapid adjustments to workforce skills in order to improve graduates' abilities to meet job market expectations. A lack of jobs does not exist in the US; instead, a lack of skills in the right disciplines is the actual crisis.[45] US and international employers estimate that only 45 percent and 42 percent of graduates, respectively, are equipped to contribute immediately to the workforce.[46] Exacerbating the problem is students' tendencies to select four-year institutions over CTE or two-year programs based on perceptions that a bachelor's degree is the only path toward career success. This, in turn, can widen the workforce skills shortfalls, expand the debt-laden population, and ultimately lead to US businesses opting for overseas employees where the needed skills exist.

Unfortunately, the stigma of vo-tech resides with CTE and the barrier remains. The states have the power to change these misperceptions and increase overall enrollment in CTE programs. To achieve this objective, governors should work with their legislatures to provide tax incentives, above and beyond existing credits and deductions, for students who enroll in accredited programs. Governors can direct their Chief State School Officer to coordinate with the state's Commerce Department in determining which CTE skills are most desirable by local industry partners. Many states are already in the process of increasing resources for post-secondary CTE and should continue.[47] However, some states, like Arizona, have moved in the opposite direction and have reduced the overall funding for CTE, which can harm the overall productive capacity of a state's workforce.[48]

Align Course Equivalencies to Ease Credit Transferability

Students who complete higher education courses must be assured that credits they earn, as a result of coursework purchased and completed, will transfer to other institutions or higher level institutions. In a recent national study, "only 58 [percent] of community college transfers were able to bring over 90 [percent] or more of their college credits to the [four]-year institution."[49] This fortunate 58 percent "have an odds of graduation more than 2.5 times greater than students with less than half their credits transferred" to a four-year institution.[50] This inconsistency across the nation is a wasteful barrier to creating an efficient supply chain and is a disservice to higher

education's primary customer. Two-year and four-year public institutions must expand efforts to ease the credit transfer process between institutions. Massachusetts is just one example of a US state already moving toward this model.[51]

To incentivize this model across the nation, the ED should pursue a federal grant program for states that reimburses costs associated with efforts to align credits earned in certification programs and associate's degrees with coursework requirements owned by public four-year programs. The federal grant program could provide three-year grants to states that opt to embark on this higher education system change. The three-year restriction incentivizes states toward near-term changes that enact benefits quickly and then minimizes sustainment costs that they would bear after the federal grant ends. The states fund the costs up-front, with the federal grants reimbursing state outlays once outcomes are met and verified.

From this effort, students will benefit from a reduction in the full cost of courses taken in pursuit of a degree since all coursework will be applicable. Secondly, it offers a practical pathway for students to continue their education and stop perceiving the certificate or associate's degree program as terminal objectives. Alignment of these community college activities to four-year degree programs removes the unfavorable odds scenario for the less fortunate 42 percent of students who do not benefit from mass transfer of credits. [52] The reduced student costs and transferability of credits to the next higher level should drive greater interest for students to continue their education and producing greater revenue for states in the future through a higher-skilled workforce.

The US supply chain for higher education is not suffering for a lack of product on the market; it is suffering a lack of the right product. By not focusing on the primary customer and giving the wrong type of access to higher education, the market is not as effective as it could be. Right sizing the education received by the primary customer will provide needed job skills and make the customer more competitive. With incentives in place to increase enrollment in post-secondary CTE and removing impediments to credit transfer between institutions, the higher education market will be postured better to meet the needs of its customers.

Affordability

If a certification or degree from a higher education institution is the most assured way for individuals to achieve the American dream, declining affordability represents one of the greatest barriers to achieving that dream. An average tuition bill for students at a public four-year college has increased by more than 250 percent over the past forty years and rising tuition costs are likely a big reason why higher education seems out of reach for prospective students.[53] Additionally, a recent Gallup-Purdue Index study found that 35 percent of 2000-2014 US college graduates reported graduating with more than $25,000 of student loan debt.[54] While graduating with high levels of debt is holding borrowers back from reaching their full potential, the more damaging outcome is for students who take on debt but never complete a degree. Interviews with university admissions and financial aid officers in Maryland, Massachusetts, and Massachusetts revealed that students' ability to repay their loans depends most on whether or not they graduate. In order to maximize the return on higher education and protect students from crushing debt, the US must address the affordability challenge in three distinct ways: state funding levels, K-12 standards, and the cost of remediation.

Synchronize Common Core State Standards with Higher Education Entry Requirements

A more consistent application of CCSS is key to ensuring the US maximizes the college and career readiness of its high school graduates. The academic quality of these graduates directly affects their abilities and decisions to pursue higher education, career and technical education, or enter the workforce. Structured properly, state and US education policymakers can capitalize on the benefits of the CCSS to improve the efficiency and effectiveness of the US education system and reduce higher education remediation, one of the most significant non-value added costs drivers for higher education students. Success, however, first hinges on K-12 curricula aligned to the standards that place constraints and requirements on course content and how subjects are taught.[55] Currently, state secondary and higher education institutions largely set college readiness targets independently of one another. This creates a disconnect between the knowledge and proficiency required of a high school graduate and the baseline aptitude expected of the first-year higher education student, often leading to college remediation.[56]

Success of CCSS next hinges on teacher quality, a key factor in the higher education supply chain's human capital value stream. Higher education must provide quality teacher education programs to ensure the success of students in K-12 instruction and best prepare them for college and career readiness. A study from the National Council on Teacher Quality and *US News & World Report* shows that "the majority of teacher preparation programs in the US are not providing adequate training to aspiring teachers, leaving them unable to accommodate increasingly rigorous instructional goals of public schools."[57] This inconsistent teacher preparation induces variability in student outcomes across the US with respect to the CCSS, impacting students' abilities to perform college level work upon graduation. Ultimately, K-12 schools require teachers steeped in pedagogy and subject matter content in order to best ensure success of the CCSS and student preparation.

"It is only when we consider the education system as a coherent whole that it becomes possible to analyze and deal with the tradeoffs that are inherent in any system."[58] To diagnose disconnects between state K-12 and higher education systems resulting in remediation, state post-secondary institutions and policymakers must communicate effectively with their K-12 counterparts. Most state-level attempts to connect elementary, secondary, and post-secondary education in CCSS implementation have occurred at only the highest levels of leadership between heads of state systems, superintendents, and college presidents.[59] Leaders operating at this level often do not possess the depth of experience to evaluate standards and curricula and then recommend adjustments.

To be effective, state school districts should connect their K-12 institutions through regular dialogue and working groups. For example, Kentucky created and led statewide teams of over one hundred postsecondary faculty members who provided feedback and ensured that higher education expectations were reflected in its standards.[60] The teams examined the implications of the CCSS on general education courses taught at Kentucky's two-year colleges and universities.[61] By including substantial representation of higher education faculty in the development of its K-12 CCSS, Kentucky is now better able to analyze its education process as a complete system and adjust to achieve global optimal results.

Similarly, school districts, states, and post-secondary institutions determine curricula taught in K-12 and higher education. However, their failure to marry curricula to the CCSS at each level of education fosters wasted efforts as teachers and students in subsequent education levels are often re-teaching and re-learning material, respectively. To minimize this problem, state curriculum experts and teachers from elementary, secondary, and higher education should be

involved in K-12 curriculum development. By maintaining a better understanding of K-12 CCSS curricula and pedagogy requirements, higher education can assist state K-12 schools in achieving better results with respect to the CCSS and reduce the number of high school students requiring remediation.

Additionally, school districts, states, and post-secondary institutions should properly align secondary education testing to college entrance requirements. The Partnership for Assessment of Readiness for College and Careers (PARCC) and Smarter Balanced Assessment Consortium (SBAC) are linked to the CCSS.[62] These tests, unfortunately, only measure progress against the CCSS; they are not linked directly to college placement exams. A student, theoretically, could meet the standards of the PARCC and SBAC tests and still require remedial course work by not passing the college placement examination. More closely aligning the exams permits intervention with a student before graduation, thwarting the need for remediation in college. This in essence could replace college placement exams, improving overall process efficiency, saving money through reduction of redundant exams, and lowering remediation rates.

Proliferate Co-requisite Coursework to Address Remediation

"Nationwide, the majority of community college students are required to take at least one remedial course, but less than one quarter of those same students will actually graduate with a credential of any kind within eight years."[63] With a significant portion of our nation's youth lacking the basic skills for college, it seems obvious that either state K-12 or higher education is failing America's college-bound students. Remedial course work at a higher education institution represents process inefficiency and waste between secondary and higher education institutions, because the student receives no credit for the courses and they do not apply to degree attainment. Students required to take remediation courses are delayed in their progression toward degree attainment and suffer the burden of additional tuition, books, and other fee costs. Students, nonetheless, see four-year degrees as the only path to success; the result has been more ill-prepared students acquiring more student loan debt.

Research on how to fix the remediation problem at two-year institutions revealed a three-year graduation rate for students requiring remediation of under nine percent.[64] The poor success rate was due to students being placed into remedial courses, resulting in three or more terms to enroll in their first creditworthy course.[65] Ultimately, remediation costs the states and students $2.3 billion a year, and its reduction could boost the US economy by an additional $3.7 billion per year in tax revenues from students graduating with a bachelor's degree.[66]

As noted above, continuous quality improvement in K-12 instruction and teacher preparation, as well as continuous collaboration between the various institutions will ensure students are better prepared for college and for entry into the global workforce. This requires constant feedback to high schools and adjustments to the CCSS, curricula, and testing. The Education Commission of States unfortunately found that only 30 states produce annual reports on remediation rates with just 13 providing feedback to high schools.[67] If high schools, at a minimum, do not receive feedback on how well its students meet college entry requirements they cannot make adjustments. Colorado, Florida, Massachusetts, North Carolina, Tennessee, and Washington are utilizing multi-measure approaches in evaluating high school graduates for remediation in its two-year colleges and universities.[68]

Moreover, following a remediation model popularized by the Community College of Baltimore County, Maryland, the Colorado Community College System used co-requisite remediation courses and various tools to scale and sustain a new model of remediation in

community colleges throughout the state.[69] Under this model, students receive remedial support concurrently with college-level courses.[70] Students needing additional assistance receive supplemental support while taking creditworthy courses towards their degree. The remedial class is now a co-requisite college-level course, instead of a prerequisite to taking a college-level course.[71] Co-requisite remediation allows students to continue their education without the penalty of courses not counting toward a degree. The end state of this initiative is two-fold. First, it reduces student loan debt, by making all coursework count toward the next level of higher education. Second, it offers students a real pathway to continue their education without the financial burden of repeating basic degree requirements.

Colorado's efforts are paying huge dividends. Prior to implementing the co-requisite model, only 31 percent of students enrolled in remediation finished the college-level course in two years; now, 64 percent complete it in one year.[72] While remediation should be ameliorated through CCSS discussed above, currently the success of many students hinges on the availability of this supplemental program. The problem is the structure of delivering remediation, not the remediation itself.[73]

Mandate Minimum State Funding Levels for Universities

Controlling tuition costs requires that state funding contributions to colleges and universities be addressed. While specific solutions could vary by state, the general policy should index state contribution funding levels to no less than 50 percent of institutional operating costs. While not completely eliminating the prospect of tuition increases, this would help stabilize rising student costs and fix the states' investment in their institutions of higher learning. Since most states collect revenue through income and property taxes, they can benefit from the increased salaries of graduates from their colleges and universities in the long run. If this future revenue was not a persuasive enough reason for the states to adopt a funding floor, the federal government could force them into adopting this floor by linking Title IV funding for students to a specifically delineated support level individual states would be required to provide for higher education.

This approach will help bring college costs under control for prospective students. While loans will still be necessary for many to attain their educational goals, these steps should keep debt levels manageable while sharing the burden among the states, the federal government and the students. This equitable distribution of the costs of higher education is logical since all three parties stand to benefit from the increased earning potential of a college graduate.

Accountability

With US society's status quo evolving to a mandate of earning post-secondary college degrees, the demand for higher education (i.e., attendance and degrees conferred) is projected to continue rising.[74] As demand increases, accountability in US higher education becomes more critical. Unfortunately, inadequate access to marketplace information and an antiquated accreditation system provide barriers to improving higher education institution accountability. These barriers further limit opportunities for the higher education system's primary customer (the student) to become more competitive for future employment.[75]

Improve Information for Student (Customer) Decision-Making

Prospective students must have access to better marketplace decision-making information to assess higher education institutions. This information must include data that is based on school costs and outcomes of graduates in different fields, providing an improved understanding of what

to expect after graduation. The current information available in the IPEDS falls short of providing the data the customers need in order to decide how best to use of their education dollars. For example, when accounting for college completion rates, IPEDS does not include the non-traditional college freshman nor transfer students within the higher education system, two of the fastest growing demographics in higher education attendance. This narrow-focused approach results in "significant confusion over basic definitions of terms, manual gathering of data outside of the computer systems designed to collect data, and, due to confusion over which students to include in IPEDS data, the systematic non-reporting of large numbers of degree-seeking students."[76]

To overcome this challenge, the ED must overhaul IPEDS with support from the full range of higher education institutions. For example, IPEDS must account better for student inflows and outflows through higher education institutions, accounting for circumstances like students starting later in life versus immediately following high school, students transferring between schools, and students who stop and start for myriad reasons. Furthermore, to support longitudinal data analyses, the updated IPEDS must include earnings data, to include employment within and outside of the area of study and median earnings at five and ten years following degree completion.[77] Once this information is assembled, the updated IPEDS data should be made accessible, exportable, and understandable to the full range of prospective students.

The idea of expanded data is not new and follows in the footsteps of many similar concepts going back, at least, to the 2006 ED-sponsored Spellings Commission recommendation to create a "consumer-friendly information database on higher education" to provide the *customer* with the information needed to make rational decisions and improve market efficiency.[78] One step in the right direction was the creation of the College Scorecard website. While College Scorecard begins filling some of the information gaps, it does not provide data to correlate earning a degree with working in a particular field of study or employment. Additionally, it misses the mark on providing a long-term view with information such as median income over longitudinal timeframes. A searchable, interactive web-based database would allow students to conduct the same types of analysis done today only by think tanks and research studies. Making these improved datasets available, private firms (e.g., *US News and World Report* and *Forbes*) could update their traditional products with information more useful to rational decision-making, serving a wider range of the student population who may be internet access-limited or not database savvy.

In order to incentivize higher education institutions to provide the updated datasets, the ED must continue linking IPEDS data submissions to Title IV federal aid access. With 39 percent of students, as currently captured in IPEDS, using federal student loans to pay for higher education attendance, the Title IV spigot is the strongest lever available to incentivize the desired behavior in higher education institutions. Additionally, ED should explore connecting accreditation to an institution's participation in the data sharing effort. If an institution chooses not to report its data, then it would be ineligible for accreditation. These approaches would overcome many of the bureaucratic challenges that hamstring system-wide approaches to improving higher education. These challenges were characterized clearly during a recent interview with a state Commissioner for Higher Education in which he expressed frustration as to his ability to access data owned by the higher education institutions in his state, data they are loath to provide because it may not paint the prettiest picture of their product to prospective students.[79]

To make all of this happen, Congress should pass legislation updating the Higher Education Act to remove the prohibition on the "[ED] from creating a 'student unit record system, an education bar code system, or any other system that tracks individual students over time.'"[80] This

approach would permit implementation of Senator Lamar Alexander's recommendations for how to "increase data quality and transparency for federal program management and for informed consumer decision-making" found in his March 2015 white papers on reauthorization of the Higher Education Act.[81] Short of these changes to data collection and sharing, students will continue to be disadvantaged in their abilities to make rational decisions about attending institutions of higher education, leading too many to pursue degrees that will leave them ill-prepared to meet the demands of the workforce.

Update the Accreditation System to Improve Outcomes

A continuous and centralized accreditation oversight of each higher education institution is an imperative for improved quality in US higher education. The non-governmental accreditation system in the US traditionally has been based more upon evolution than design and is largely an illogical array of antiquated activities, processes, and structures.[82] One noted researcher characterizes the current peer-review college accreditation system as "a crazy-quilt of activities, processes, structures that [are] fragmented, arcane, more historical than logical and has outlived its usefulness."[83] Recent "changes in student populations, new instructional modalities, transfer of credit, and calls for heightened transparency and accountability in post-secondary education" are the new emphasis of credible college accreditation.[84] As such, an incremental adjustment of college accreditation to a more central and continuous framework of oversight can serve positive purposes. Further, with over $75 billion invested annually in the form of student loans and grants, the federal government and its taxpayers deserve a credible, accountable accreditation system that ensures institutes of higher education provide a quality education to their customers (the attending students).[85]

As discussed earlier in this paper, large numbers of students graduate with higher education degrees yet do not possess the skills industry needs. A 2009 study found that 63 percent of aerospace and defense industry respondents expressed concern with "moderate to serious shortages" in the "current availability of qualified workers."[86] Higher education institutions (suppliers) are a central part of this accountability problem. If suppliers choose not to self-correct, regulatory measures can serve to correct failures in market conditions.

A corrective, systems-approach framework would install an umbrella entity chartered to provide centralized oversight of the existing accrediting agencies. This methodology directly links standards of higher education quality, costs of education, and the needs of the US NSIB in a globally-connected economy. It addresses the question of "who is assessing the assessors, or who is accrediting the accreditors?" The umbrella organization would serve as the arbiter of quality and the assurance of credible higher education accreditation, which in turn improves product quality for the consumer. Its authorities would go beyond the advisory role currently performed by the National Advisory Committee on Quality and Integrity. Moreover, it would enable stronger influences from industry and the Department of Labor in the national discussion of higher education quality, responsiveness to global economic forces, and the skills of graduates who will enter the workforce.

If accreditation is to become a system that ensures a constant stream of quality graduates from institutions of higher education in the US, then it must move beyond a system of self-administration comprised of "trust-based, standards-based, evidenced-based, judgment-based, and peer-based activities."[87] The new system must retain these listed attributes, but with the addition of accountability, responsibility, and guaranteed oversight from an unbiased centralized authority. The evaluation must also be continuous and not measured in terms of decades, but at the tempo of

collective student needs and societal demands. Through a balanced approach and separation of influences based upon funding, leadership appointments, and policy-making agencies, an improved system can evolve into a better condition of "incremental broadly shared prosperity."[88]

CONCLUSION

Higher education in the US is believed to be a positive, productive, and driving force for individual and societal success. Evidence of this success is apparent across the spectrum of NSIB globally competitive segments. Historically, higher education's diversity and complexity have enabled the US to thrive in a hyper-competitive world and evolve into the envy of other nations. Strong research and funding have made American colleges and universities among the world's most prestigious, making them particularly attractive to international students, professors, and researchers in the pursuit of academic excellence.[89] However, the past is not a perfect forecast of the future, especially within an ever-changing environment. As such, the US must not rest on its laurels. The above accolades of past success do not excuse the need for continuous improvement that address US higher education's inefficiencies in the 3A's of accessibility, affordability, and accountability.

Seven recommendations presented in this paper aim to close identified shortfalls, ultimately resulting in an improved higher education system across the US. A system that must provide its primary customers with the ability to meet the demands of industry, society, and the instinctive curiosity of human behavior. The recommendations lay out mechanisms for removing antiquated barriers to accessing higher education products, creating a more affordable cost burden, and establishing a system that motivates institutions to focus more on the customer and the end product they receive.

The US needs a higher education system that progresses beyond antiquated status quo characteristics and acknowledges shifting demographics, embraces a dynamic workforce, and focuses on student outcomes. Ultimately, the proposed changes will sharpen the US higher education system to one that remains focused on strategic objectives and enhances institutional accountability. In the end, higher education must be *accessible* to students who choose to pursue its benefits, *affordable* to students across the full range of individual resources, and *accountable* in such a way that the credentials received meet the needs of students, industry, and society.

ENDNOTES

[1] The NSIB includes industry sectors that provide direct and indirect support to the nation's ability to pursue independently and freely its national interests. These range from traditional defense industry sectors to education, agriculture, energy, environmental, and healthcare industries among others.

[2] Kevin Eagan et al, *The American Freshman: National Norms Fall 2015*, (Los Angeles: Higher Education Research Institute at UCLA, 2015), 48, accessed February 29, 2016, http://www.heri.ucla.edu/briefs/theamericanfreshman2015-brief.pdf.

[3] Public and private institutions have other revenue sources. Additionally, research and development funding and large sports programs provide many higher education institutions added revenue streams. However, the preponderance of the differentiation efforts are aimed at attracting students and the tuition they pay.

[4] Michael E. Porter, "The Five Competitive Forces That Shape Strategy," *Harvard Business Review*, January 2008, 82-83. http://ezproxy6.ndu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=28000138&site=ehost-live

[5] National Public Radio, "Why America's Schools Have a Money Problem," April 18, 2016, accessed April 18, 2016, http://www.npr.org/2016/04/18/474256366/why-americas-schools-have-a-money-problem.

[6] Ryan McCormack, "Colleges and Universities in the US," *IBIS World Industry Report 61131a* (December 2015), 1-39, accessed March 27, 2016, http://www.ibisworld.com/industry/default.aspx?indid=1970.

[7] Education World, "Study Shows Teacher Training Inadequate," March 26, 2016, accessed March 27, 2016, http://www.educationworld.com/a_admin/teacher-prep-inadequate-says-study.shtml.

[8] Ibid.

[9] Josh Bersin, "Growing Mismatch between Education and the Needs of Business," *LinkedIn*, December 10, 2012, accessed March 27, 2016, https://www.linkedin.com/pulse/20121210001305-131079-want-a-job-get-training-anywhere.

[10] Outcomes of this nature are not inherently bad. Not all engineering school graduates end up as engineers. Not all English majors end up as writers or book editors. Many graduates with these skills lead successful lives and careers. However, one must ask if a graduate in a particular field would have pursued a different program knowing with better fidelity the workforce skills demanded in the field of study.

[11] Sarah A. Beamer, "Private vs. Public Higher Education Budgeting," *Planning for Higher Education*, 40, No. 1, (Oct-Dec 2011), 7-11, accessed April 14, 2016, http://eric.ed.gov/?id=EJ944328

[12] Ibid., 7.

[13] Amal Kumar and Michael Hurwitz, "Supply and Demand in the Higher Education Market: College Enrollment," February 2015, http://research.collegeboard.org/sites/default/files/publications/2015/8/college-board-research-brief-supply-demand-college-enrollment.pdf. Accessed on April 13, 2016.

[14] National Center for Education and Statistics, "IPEDS: Use the Data," accessed May 17, 2016, http://nces.ed.gov/ipeds/Home/UseTheData.

[15] National Center for Education and Statistics, "Fast Facts on Enrollment," accessed May 11, 2016, http://nces.ed.gov/fastfacts/display.asp?id=98

[16] Ibid.

[17] Ibid.

[18] Ibid.

[19] Ibid.

[20] Thomas D. Snyder and Sandy A. Dillow, National Center for Education Statistics, "Digest of Education Statistics 2013," May 2015, accessed April 14, 2016, 634.

[21] National Center for Education Statistics, "Price of Attending an Undergraduate Institution," accessed May 18, 2016, http://nces.ed.gov/programs/coe/indicator_cua.asp.

[22] Michael Mitchell, Vincent Palacios, and Michael Leachman, *States Are Still Funding Higher Education Below Pre-Recession Levels*, (Washington, DC: Center on Budget and Policy Priorities, May 1, 2014), 4.

[23] Doug Lederman, "Setting Quality Standards in Higher Education," September 9, 2010, accessed on April 11, 2016, https://www.insidehighered.com/views/2010/09/09/fritschler.

[24] "Accreditation and Quality Assurance," US Department of Education, accessed on April 6, 2016, https://www2.ed.gov/about/offices/list/ous/international/usnei/us/edlite-accreditation.html.

[25] "The 100 Best Universities in the World Today," TheBestSchools.org, accessed May 16, 2016, http://www.thebestschools.org/features/100-best-universities-in-world-today/?utm_referrer=https://www.google.com.

[26] Interview with an official at Minuteman High School, Lexington, Massachusetts, April 4, 2016. Interview was confidential. Interviewee's name was withheld by mutual agreement.

[27] William J. Hussar and Tabitha M. Bailey, "Projections of Education Statistics to 2023," National Center for Education Statistics (April 2016), 56, accessed April 16, 2016, https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015073.

[28] "Median Incomes v. Average College Tuition Rates, 1971-2012," ProCon.org, accessed April 14, 2016, http://college-education.procon.org/view.resource.php?resourceID=005532.

[29] Colorado Department of Higher Education, *2014 Legislative Report on Remedial Education*, (Colorado, June 4, 2015), 5, accessed April 14, 2016, http://highered.colorado.gov/Publications/Reports/Remedial/FY2014/2014_Remedial_relJune03.pdf

[30] Colorado Department of Higher Education, "2014 Legislative Report on Remedial Education," (June 4, 2015), 5. Available at http://highered.colorado.gov/Publications/Reports/Remedial/FY2014/2014_Remedial_relJune03.pdf; Interviews with officials at Maryland State Department of Higher Education, Northern Virginia Community College, and Massachusetts Department of Higher Education, February 25, 2016, February 26, 2016, and April 5, 2016. Interviews were confidential. Interviewee names are withheld by mutual agreement.

[31] Western Interstate Commission for Higher Education, "Knocking at the College Door," December 2012, xii, accessed April 14, 2016, http://www.wiche.edu/knocking-8th.

[32] John Ebersole, "Top Issues Facing Higher Education in 2014," *Forbes eBook*, (January 13, 2014), 1, accessed April 14, 2016, http://www.forbes.com/sites/johnebersole/2014/01/13/top-issues-facing-higher-education-in-2014/#1c2a0c681024

[33] Ibid.

[34] Senator Lamar Alexander, "Higher Education Accreditation Concepts and Proposals," (white paper published by the Senate Committee on Health, Education, Labor, & Pensions, March 23, 2015, Washington, DC), accessed April 19, 2016, https://www.help.senate.gov/imo/media/Accreditation.pdf

[35] Molly Corbett Broad, "Comments on Accreditation White Paper," (memorandum for Senator Lamar Alexander, Washington, DC, April 30, 2015), accessed May 13, 2016, http://www.comfsm.fm/dcr/misc/crac/ACE-Community-Comments-on-Accreditation-4-30-15.pdf; "The programs authorized under this title are the primary sources of federal aid to support postsecondary education." Alexandra Hegji, "The Higher Education Act (HEA): A Primer: R43351," Congressional Research Service: Report (January 2, 2014), 10, accessed May 18, 2016, https://www.hsdl.org/?view&did=749333.

[36] Amelia Teng, "One in three undergrads is from poly: MOE," *The Strait Times*, May 2, 2016.

[37] Washington State Budget & Policy Center, "Cuts to Higher Education Lead to Increases in Tuition," June 06, 2012, accessed April 14, 2016, http://budgetandpolicy.org/schmudget/cuts-to-higher-education-lead-to-increases-in-tuition.

[38] Colorado Department of Higher Education, "2014 Legislative Report on Remedial Education," 5.

[39] Ryan J. Davis and Robert T. Palmer, "The Role of Postsecondary Remediation for African American Students: A Review of Research," *The Journal of Negro Education*, Vol. 79, No. 4, (2010), 504, accessed April 14, 2016, https://works.bepress.com/robert_palmer/13/. Racial, gender, and socio-economic impediments to accessing higher education still exist. However, in terms of the larger US NSIB, this paper focuses on the issues associated with CTE and credit transferability as they link more clearly to preparing all US students for competitive entry into the workforce. The sociological issues require continued attention through political discourse but will not be covered in further detail.

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