The Impact of Information Acquisitions through the Freedom of Information Act to Generate Competitive Advantages within Academia

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ABSTRACT

Higher educational institutions at all levels of academia are developing competitive advantages such as flexible and hybrid learning environments, modern infrastructure, tailored degree programs and curriculum, or productive faculty to satisfy the individual needs of students, industries, and nations. Consequently, like corporations, higher educational institutions are using traditional business strategies such as information acquisitions to develop an understanding of the markets they serve with the intention of creating the correct competitive advantages to capitalize on those markets. This study will seek to understand the factors that measure, and to what extent, higher educational institutions are creating competitive advantages and how information acquisitions is leading to their successful development; specifically, information acquired through the use of the Freedom of Information (FOIA) Act.

Keywords*:* competitive advantage, universities, higher education, Freedom of Information Act, market forces

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INTRODUCTION

Since the advent of increased government spending to support higher education; governments, students, their parents, and other stakeholders are paying large sums of financial capital to thousands of universities across the country to provide a service, a product, or an experience (Baum, 2007; Roska, 2015); thus, universities are competing within this market to increase their standing within their particular market segment. This shift in free market forces has changed the dynamic of education where students are now the customers and educators are employees of higher education (Schellekens & Van, 2003; Stodnick & Rogers, 2008; Dawson, Burnett, & O'Donohue, 2006), and the university operates under the same market conditions and factors as corporations (Gerardo & Pederzini, 2017). To effectively compete within the market of higher education, universities are turning to traditional business strategies to develop competitive advantages to recruit talented students and faculty into its ranks, produce highly skilled professionals that corporations can capitalize on, develop meaningful publications that enhance prestige, and ensure the longevity of the institution (Daniel, 2015; Dawson, Burnett, & O'Donohue, 2006).

University Inc.

Individual markets themselves are major drivers of how an organization will develop advantages within that market; although, the development of a competitive advantage within one market may be counterproductive within another market as each market segment is unique. Understanding the competitive forces within a particular market is important when developing business strategies to forge competitive advantages (Porter, 1985). Porter (1985) describes five competitive forces that influence markets: “the entry of new competitors, the threat of substitutes, bargaining power of suppliers and buyers, and the rivalry between existing competitors” (Porter, 1985, p. 4). The higher educational market is itself filled with buyers such as students, governments, corporations, and parents. These individuals or entities are bargaining for the absolute best product at the most competitive price. Universities are like armies; they require a tremendous amount of material and services to deliver a quality educational product to the customer. Lastly, there are new entries in the form of emerging higher educational institutions looking to gain a piece of the market share, or even expand on the market all together, such as trade schools or new professional schools within universities. As innovative technologies and techniques are developed by industry, it is the responsibility of higher educational institutions to recognize these changes, develop curriculum, and degree plans to meet the needs of emerging or shifting market needs (Porter, 1990; Hann, 2015). Consequently, emerging educational institutions are looking to enter the market and develop substitutes to meet these market demands. For example, a substitute could be described as a master's certificate in lieu of a master’s degree.

Understanding the market’s competitive forces to develop effective competitive advantages can prove to be very powerful, and are “built up slowly over time to cultivate an organizations value” (Freeman, 2001, p. 39) that “aims to establish a profitable and sustainable position against the forces that determine industry competition” (Porter, 1985, p. 1). Ford Motor Company, General Electric, and JP Morgan Chase are iconic American brands that speak of longevity, quality, and history. Higher educational institutions are the same, Purdue, Notre Dame, and Pennsylvania State are iconic American higher educational institutions where the educational experience is itself, the product.

A Nation's Need to Educate

The nation's economy requires a highly competent and educated workforce to fuel the nation's competitive advantages; consequently, the nation's needs influence a university's curriculum development in order to meet the requirements of the economy (Porter, 1990; Liu, 2011). "A pool of labor and raw materials" (Porter, 1990, p. 79) are the fundamental factors necessary for a nation, and its corporations to achieve a competitive advantage within the global market (Porter, 1990). However, markets such as high technology, heavy industry, medicine, construction, and law are looking to compete within the global market and a workforce populated solely with high school educated individuals is inadequate. Highly educated and specially trained individuals are necessary to create a nation's competitive advantage on the global stage; thus, an equally equipped higher educational system is required (Dawson, Burnett, & O'Donohue, 2006; Porter, 1990).

A University's Ranking

It is almost impossible to find a market where all its participants are alike, and the market of higher education is no different. Porter (1985) offers the four generic market strategies of cost-leadership, cost-focus, differentiation, and differentiation-focus and are used by this analysis to describe higher educational market groupings (Porter, 1985). Trade schools offer educational experiences in carpentry, plumbing, and cosmetology; community colleges educate the masses in the liberal arts; state universities and private educational institutions develop skilled professionals; and Ivy League universities offer a prestigious experience and reputation.

Cost-leadership is when an organization strives to be the lowest cost producer of a product or service while maintaining the most valued product or service within that segment; although, an organization will not be sustained by merely producing a poor product at the absolute lowest price. An organization implementing the cost-leader strategy must produce a product or service at the best quality, and the best price, within that market segment to be the cost leader. The cost leader is in "pursuit of economies of scale" (Porter, 1985, p. 12) where volume is the generator of profits such as McDonalds or Walmart. The cost-leader within the higher educational market is the 0-2 year community college as it seeks to educate large numbers of students at a reduced cost; however, the quality of the education provided by the community college is excellent and is easily transferable to traditional four year universities making the community college inexpensive and of great value (Crawford & Jervis, 2011; Levin & Kater, 2012).

A corporation may employ a strategy of differentiation by developing a premium product line, or a superior after-sale maintenance program in order to set themselves apart from its competitors; thus, allowing them to compel a higher price for its services or gaining a greater percentage of the market share (Porter, 1985). The traditional state or private four-year educational institution employs the strategy of differentiation because it seeks to enhance its capabilities through the market by developing premium products that differentiate itself from the rest of the market. For example, comprehensive libraries, specialized degree programs, and respected professors are all examples of how a university differentiates itself within the market.

The market focuser is an organization that "selects a segment or group of segments within the industry and tailors its strategies" (Porter, 1985, p. 15) to achieve its desired outcome

and employs both the cost or differentiation strategies. A trade school is an example of an organization that employs a cost-focus strategy because it tailors its curriculum toward a particular focus, such as carpentry or cosmetology. Likewise, a focused-differentiation institution is a respected university that has placed emphasis on professional excellence such as law or medicine.

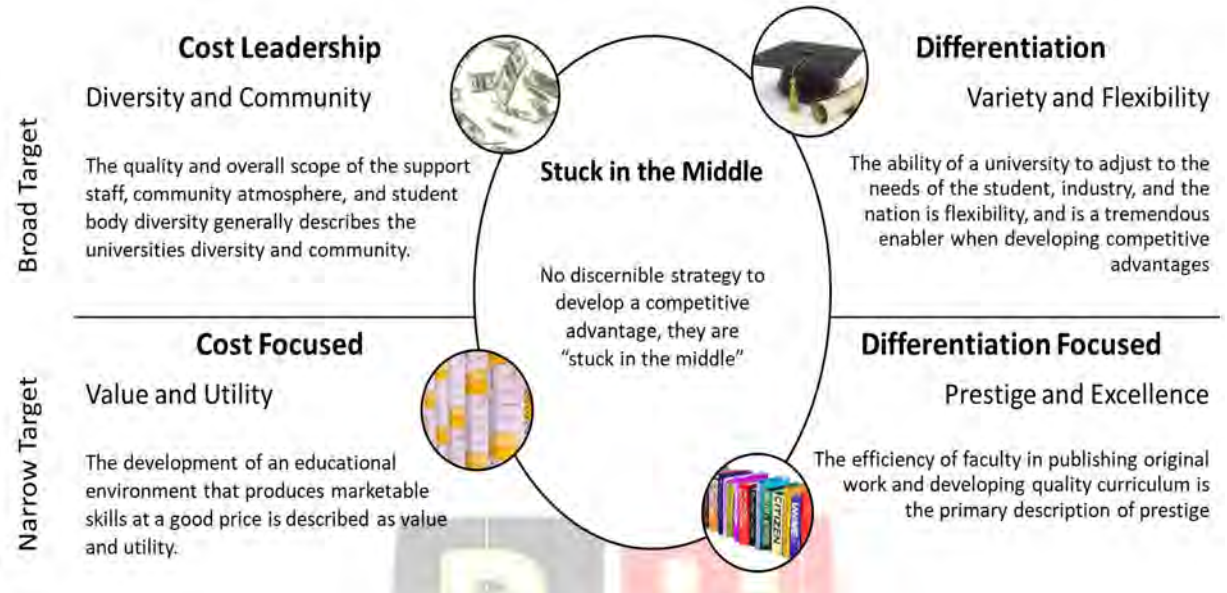
VARIABLES

What makes a university successful? The theory is that a more educated society will produce higher financial benefits to the society; however, the actual measurement of this concept is "extremely complex, almost always controversial, and cannot be undertaken without the imposition of simplified assumptions" (Chapman & Lounkaew, 2015, p. 768). At its core, educational institutions are to educate the nation's population to achieve the nation's competitive advantage with the ultimate goal of increasing the nation's quality of life (Porter, 1990). With the understanding that one of a nations competitive advantages is an educated workforce; a well-trained electrician is just as valuable to the nations competitive advantage as a Harvard educated lawyer. Consequently, the business strategies employed by higher educational institutions to develop their competitive advantages are just as important to Harvard as it is to a local community college or trade school. The question is if universities that are achieving a favorable advantage over their competitors are utilizing information acquisitions to aid in their advancement.

To test the theory of information acquisitions and its impact on a university's competitive advantage, a set of variables were identified that measures a university's competitive advantage. Housed within the Department of Education's National Center for Education Statistics (NCES) is a database that contains a vast collection of variables that effectively describes a university's behaviors, activities, and performance. Undoubtedly, the factors associated with measuring a university's competitive advantages are broad in scope, complex, and multifaceted (Gerardo & Pederzini, 2017; Chapman & Lounkaew, 2015). To better understand these variables, it was necessary to bin the variables into the following themes of prestige and excellence, diversity and community, value and utility, along with variety and flexibility. These categories of variables were then applied to Porter's theory of competitive advantage and his four generic strategies of cost-leadership, cost-focus, differentiation, and differentiation-focus; however, they are not hardened within their scope. For example, variables of placement tests such as the Scholastic Assessment Test (SAT) are indicators of a university's excellence because a university exercising the generic strategy of differentiation can be more discerning through its student selection process; however, a cost-leadership focused community college may also require entrance exams to assess student quality.

Figure 1

Business Strategies and Variable Map



Note. Porter's competitive forces were utilized to segment universities within the higher educational market. The variable segments are not hardened within their scopes, each higher educational institution, no matter the segment, may share some, or all, of the variables described.

Prestige and Excellence

The efficiency of faculty in publishing original work and developing quality curriculum is the primary description of prestige and excellence.

Faculty and Publications

Prestige is the primary source of competitive advantage possessed by universities ranging from "Nobel prizes to athletics" (Hann, 2015, p. 46), and can be defined as a university's primary intangible asset. At its core, higher educational institutions are chartered to achieve superior academic excellence with the goal of obtaining an international reputation of elevated status. A prominent indicator of prestige and excellence is when an institution experiences an elevated level of "faculty productivity by adding new knowledge to reputable publications [; thus, securing] a competitive edge within the market" (Ali, Bhattaacharyya, & Olejniczak, 2010, pp. 164-165; Barron, 2016). The direct instructional faculty and their publishing efficiency are paramount in providing a quality and meaningful student experience when attending a university; however, full-time faculty produces more favorable student outcomes over part-time faculty (Chingos, 2016, p. 106). Chingos (2016) hypothesizes that full-time faculty perform better than part-time staff due to a more robust compensation package resulting in full-time faculty remaining at the institution longer negating the need for the "cobbling together [of] work between multiple institutions" (Chingos, 2016, p. 106). Faculty performance or publishing

efficiency is tied, or should be tied, to appropriate compensation (Burns, 2018); thus, the variables of total faculty, part-time faculty, and average salary are appropriate in measuring the effectiveness of the institution's faculty.

Leiden University (2019) maintains the Leiden ranking and subsequent dataset that describes and ranks universities by its publication efficiency. The variable, all publication, describes the total number of publications generated by an institution's faculty. Not all publications are the same, the preceding variables of frequently cited, gold, and international collaboration provide credence to the quality and standing of the publications. The frequently cited variable is the "top 1% of all most frequently cited publications compared to other publications within the same field and within the same year" (Leiden , 2019, p. 12). The variable, gold, describes the "number of publications that have been published within the most prestigious journals" (p. 12) as categorized by the Leiden ranking. And, the variable, international collaboration, is the "number of publications that were co-authored with an institution from another country" (Leiden , 2019, p. 12). Ultimately, when a university successfully achieves the status of prestige through publication the university can "bestow more elite social status on their members" (Gerardo & Pederzini, 2017, p. 408); thus, enhancing the institutions overall prestige.

Programs

As industry becomes more advanced with the advent of new technologies and more precise business and manufacturing standards, educational institutions are charged with developing equally tailored degree and certification programs to meet the ever-changing needs of industry and students (Porter, 1985; Hann, 2015). Studying the number of degree plans and certificates offered by a university provided a good indicator if a higher educational institution is satisfying industry's needs. The variable of, total programs offered, is the variable used to measure the number of degree plans offered by a higher educational institution. The preceding nine variables breaks-down the total number of programs offered into degree categories, such as the number of one-year certifications offered, or the number of associate degrees offered by a particular higher educational institution (US Department of Education, 2020).

Infrastructure

Schellekens & Van (2003) and Hann (2015) both state that a university's infrastructure such as dormitories, classrooms, laboratories, libraries, and internet capabilities "represent internal conditions for the flexibility of programs" (Schellekens & Van, 2003, p. 287) such as science and medicine, business, the arts, community, and engineering and is a strong indicator of effective infrastructure and increased student population (Hann, 2015; Schellekens & Van, 2003). For example, a university that possesses hospital infrastructure would be better situated to develop a curriculum and degree program in emerging medical procedures over a university that does not possess such infrastructure, or a trade school that possesses an auto body shop would hold the ability to develop a competitive advantage in metal working over an institution that does not. To understand an institution's infrastructure, the variable, total student enrollment, is a broad indicator of a university's infrastructure (Hann, 2015); thus, the variable of dormitory capacity is a good complementary variable to describe a university's infrastructure and how it is comparable to student population. Moreover, the advent of the virtual library, containing vast resources of databases, filled with professional and international journals has been extended to the non-

traditional student for academic consumption. The modern library no longer represents a university's collection of acquired knowledge but “at a global level, [is a collection] of complex social, technical, economic, and political factors” (Walton & Edwards, 2001, p. 199). Likewise, the four variables that describe a higher educational institution’s library capabilities is the total number of books, both physical and electronic along with the total number of media and databases (US Department of Education, 2020).

Table 1

Descriptive Statistics (Prestige and Excellence)

Variable	Obs	Mean	Std.Dev.	Min	Max
Faculty and Publications					
Salary	5,599	$57,142	$17,558	$845	$131,000
Faculty Total	5,599	326	548	0	5762
Faculty Full-Time	5,599	200	368	0	5080
All Publications	5,599	9.9	242.5	0	10961
Top1% of Frequently	5,599	0.2	3.8	0	151
Cited Publications					
Gold Publications	5,599	1.1	26.6	0	1342
International	5,599	3.6	88.4	0	3826
Collaboration					
Programs Offered					
Total Programs Offered	5,599	98	128	3	1107
One-Year Certificate	5,599	14	31	0	375
Two-Year Certificate	5,599	13	24	0	234
Four-Year Certificate	5,599	1	4	0	87
Associates Degree	5,599	22	47	0	348
Bachelor’s Degree	5,599	31	61	0	441
Post-Baccalaureate	5,599	3	11	0	210
Master’s Degree	5,599	11	29	0	369
Post-Masters	5,599	1	5	0	123
Doctors	5,599	2	8	0	180
Infrastructure					
Dormitory Capacity	5,599	316	775	0	10,262
Total Student Enrollment	5,599	2,389	4,744	2	60,603
Libraries					
Books	5,599	52,849	126,000	0	2,640,000
Electronic Books	5,599	109,000	393,000	0	25,000,000
Media	5,599	61,685	758,000	0	30,300,000
Databases	5,599	166	2,849	0	175,000

Note. Adapted from the National Center for Education Statistics (NCES) (US Department of Education, 2020).

Variety and Flexibility

The ability of a university to adjust to the needs of the student, industry, and the nation is variety and flexibility, and is a tremendous enabler when developing competitive advantages.

Delivery Mode

A student body's demographics is no longer primarily young, resides on campus, or are inexperienced (Dawson, Burnett, & O'Donohue, 2006; Levin & Kater, 2012); technology and innovative teaching methodologies have allowed universities to extend quality higher educational programs to working adults, often with families, and well developed careers. The "combining of work experience to traditional course work" (Schellekens & Van, 2003, p. 282) has allowed universities to develop flexible learning programs and has permitted professionals to gain skills to advance their careers, allowed a new generation of people to achieve a long lost goal, or given someone an opportunity to reach their true potential (Schellekens & Van, 2003). These are individual student accomplishments that would have been impossible without innovating flexibility into a university's infrastructure. The variables of distance and hybrid learning environments describe if a student is exclusively enrolled in distance learning; consequently, a student enrolled in a mix of on-campus classes and distance learning would be categorized as 'some' and a student that is only enrolled in on-campus courses would be categorized as 'not' taking any distance learning courses (US Department of Education, 2020). The combination of these variables can give credence to a university's commitment and capability to serve the nontraditional student; and thus, generate a competitive advantage within the ever-growing nontraditional student demographic (Schellekens & Van, 2003; Stodnick & Rogers, 2008).

Financials

Although universities do not often use profits as a measure for success (Gerardo & Pederzini, 2017, p. 408), the financial strength of an organization is a prominent necessity to developing competitive advantages. If an organization possesses a financial ability, over less financially positioned institutions, they will be better positioned to develop competitive advantages over less financially structured competitors (Porter, 1985). The variables of assets, total liabilities, expense, revenue, and endowment are basic measures of an institution's financial behaviors and health; additionally, the revenue stream has been itemized between the three primary funding sources of, federal, state, and private as the funding streams from various governmental agencies and private sources varies (Cheslock & Hughes, 2011; Baum, 2007).

Table 2

Descriptive Statistics (Variety and Flexibility)

Variable	Obs	Mean	Std. Dev.	Min	Max
Delivery Mode (Hybrid or Online Classes)					
Undergraduate					
Exclusively	5,599	7.8%	17.4%	0.0%	100.0%
Some	5,599	11.4%	18.0%	0.0%	100.0%

Table 2

Descriptive Statistics (Variety and Flexibility)

Variable	Obs	Mean	Std. Dev.	Min	Max
Not Enrolled	5,599	76.5%	31.2%	0.0%	100.0%
Graduate					
Exclusively	5,599	9.1%	22.9%	0.0%	100.0%
Some	5,599	3.7%	11.4%	0.0%	100.0%
Not Enrolled	5,599	17.2%	32.8%	0.0%	100.0%
Financials					
Assets	5,599	$32,770	$84,845	$0.0	$1,590,000
Liabilities	5,599	$10,416	$19,264	$0.0	$406,000
Expenses	5,599	$17,356	$14,194	$0.0	$199,000
Revenue	5,599	$18,381	$15,066	$0.0	$260,000
Federal	5,599	$1,240	$2,855	$0.0	$57,365
State	5,599	$2,055	$4,755	$0.0	$93,333
Private	5,599	$1,736	$6,028	$0.0	$113,000
Other	5,599	$13,351	$12,736	$0.0	$260,000
Endowments	5,599	$13,913	$70,256	$0.0	$1,490,000

Note. Adapted from the National Center for Education Statistics (NCES) (US Department of Education, 2020). To maintain consistency between the educational institutions, each financial variable is represented by student.

Diversity and Community

The quality and overall scope of the support staff, community atmosphere, and student body diversity generally describes the universities diversity and community.

Staff

Like student and faculty quality, the quality of a university's staff is vital to the effective functioning of an institution; thus, the quality of the education being delivered to the student. Beyond students and faculty, support staff such as librarians, healthcare professionals, administrative support, research, and management all drive the professional educator to develop community within the educational experience. Like all competitive business ventures, recruiting and retaining sound, effective, and efficient talent is critical to the success of the organization (Schellekens & Van, 2003; Hann, 2015; Burns, 2018). To attract and retain such talent, adequate compensation is required (Burns, 2018); thus, this analysis uses compensation packages in the form of average salary per employee category to indicate the quality of the faculty and support staff.

Assistance and Services

A sense of community and belonging to develop a total student experience is a powerful form of competitive advantage. Universities that invest in employment placement programs position themselves to not only steer students to successful careers but also develop a sense of community (Simpson & Ferguson, 2013; Dawson, Burnett, & O'Donohue, 2006). Academic excellence is a university's primary objective; consequently, a successfully graduated student that is strategically placed into employment will develop or enhance a university's positive reputation within that industry and is another powerful example of competitive advantage. In order for a higher educational institution to fully realize the market, a flexible hybrid academic calendar needs to be adaptive to students that do not have the ability to attend classes during the day or may desire an accelerated program; thus, night classes or eight-week semesters may be optimal (Schellekens & Van, 2003). Additionally, student services such as daycare centers, housing, registry, visa advice, and counseling services allows students of many types to effectively participate in higher educational programs and advanced degrees (Hann, 2015) by fostering a "sense of belonging" (Rania, Siri, Bagnasco, Aleo, & Sasso, 2014, p. 752) within the overall culture of the institution and is a source of competitive advantage.

Diversity

Building on a university's concept of culture is diversity where the collection of "different points of view foster more active thinking and decision making that is informed by a more complex and multifaceted world view rather than passive commitments based on prior experience" (Sorensen, Nagda, Maxwell, & Gurin, 2009, p. 5). Additionally, diversity also manifests a necessity when facilitating a modern knowledge based economy where students are not only expected to effectively operate within a classroom filled with different cultures, but also within the broader scope of industry to "secure long-term economic gains" (Sorensen, Nagda, Maxwell, & Gurin, 2009; Franklin, 2013, p. 31). Beyond developing well-rounded graduates ready for a dynamic business environment, universities must also compete within the higher educational market for quality students. Fostering a diverse student body assists universities in targeting a greater demographic for recruitment into the university's overall student body (Rossi, 2009). To describe diversity the variable sets of sex, age, and race were chosen and depict the percentage of that group enrolled within a particular higher educational institution.

Table 3

Descriptive Statistics (Diversity and Community)

Variable	Obs	Mean	Std. Dev.	Min	Max
Staff Salary					
Total	5,599	$34,567	$27,721	$0.0	$171,000
Research	5,599	$3,900	$16,444	$0.0	$240,000
Public Service	5,599	$2,190	$11,588	$0.0	$152,000
Librarians	5,599	$27,935	$25,443	$0.0	$140,000
Management	5,599	$57,899	$50,269	$0.0	$401,000
Business	5,599	$29,651	$29,074	$0.0	$300,000
Computer	5,599	$27,377	$29,674	$0.0	$242,000

Table 3

Descriptive Statistics (Diversity and Community)

Variable	Obs	Mean	Std. Dev.	Min	Max
Community	5,599	$22,400	$26,283	$0.0	$145,000
Healthcare	5,599	$12,651	$24,186	$0.0	$148,000
Service	5,599	$16,490	$19,118	$0.0	$88,804
Sales	5,599	$8,777	$18,681	$0.0	$120,000
Administrative	5,599	$23,667	$20,373	$0.0	$97,850
Maintenance	5,599	$14,369	$21,521	$0.0	$102,000
Production	5,599	$5,854	$14,953	$0.0	$103,000
Assistance and Services					
Study Abroad	5,599	29.0%	45.4%	0%	100%
Life Experience	5,599	35.6%	47.9%	0%	100%
Credit for Life Experience	5,599	46.9%	49.9%	0%	100%
Credit for Military	5,599	91.0%	28.6%	0%	100%
Career Counselling	5,599	79.5%	40.4%	0%	100%
Placement Services	5,599	47.4%	49.9%	0%	100%
Weekend and Evening Schedule	5,599	29.0%	45.4%	0%	100%
Diversity					
Enrollment Men	5,599	992	2,083	0	31,919
Enrollment Woman	5,599	1,397	2,745	0	39,759
Age					
Under-18	5,599	3.3%	8.0%	0%	72.0%
18-24	5,599	24.9%	32.8%	0%	100.0%
25-64	5,599	13.2%	21.1%	0%	100.0%
Over-65	5,599	0.1%	0.6%	0%	20.0%
Race					
Native	5,599	1.3%	7.0%	0%	100.0%
Asian	5,599	3.7%	7.9%	0%	100.0%
Islander	5,599	4.1%	8.8%	0%	100.0%
Black	5,599	17.8%	21.5%	0%	100.0%
Hispanic	5,599	17.6%	22.8%	0%	100.0%
Hawaiian	5,599	0.4%	3.1%	0%	99.0%
Alien	5,599	2.3%	7.3%	0%	100.0%
Unknown	5,599	4.2%	7.4%	0%	99.0%
Two Races	5,599	2.9%	3.9%	0%	63.0%
White	5,599	49.8%	28.1%	0%	100.0%

Note. Adapted from the National Center for Education Statistics (NCES) (US Department of Education, 2020).

Value and Utility

The development of an educational environment that produces marketable skills at a good price is described as value and utility.

Student

A university's retention rate is a major indicator of how a student perceives the quality of the institution and if the institution is meeting their needs and goals. Students, like all consumers, indicate if the institution they are attending is meeting their needs, and if a student is not satisfied with the institution, or the price does not justify the result, the student can opt to leave the institution (Liu, 2011; Rania, Siri, Bagnasco, Aleo, & Sasso, 2014). The institution's student retention rate is calculated by the number of undergraduate enrollments divided by the number of students that enroll the next year from the same student cohort (US Department of Education, 2020). Similarly, the student-faculty-ratio is calculated by the total number of undergraduate students divided by the number of total faculty (US Department of Education, 2020). Higher educational institutions have the luxury of being discerning when selecting their student body; thus, less prestigious institutions do not have such a luxury. Admission test scoring such as the Scholastic Assessment Test (SAT) and the American College Testing (ACT) are strong indicators of student success through higher education (Liu, 2011; Clinedinst, 2019; Roska, 2015). The variables developed from the admission scores depict the 75th percentile test scores of admitted students to an educational institution (US Department of Education, 2020).

Aid and Tuition

The rising cost of higher education has "increased customer awareness" (Stodnick & Rogers, 2008, p. 116) and is a continuing challenge for not only the student and their family, but also the nation, and industry, as they seek to acquire the most qualified individuals possible to advance the nation's competitive advantage throughout the world's economy. Students are no longer willing to pay exorbitant tuition costs with the hope that a degree will guarantee a successful career, students are more "cost and debt conscious and are questioning the value of degrees" (Morton, 2018, p. 327; Baum, 2007); Furthermore, "25% of graduates earn the same amount as the average high school graduate" (Morton, 2018, p. 327). The value of the education is of the upmost importance to the student as the cost of higher education no longer automatically translates to a career that would justify the cost of the education (Morton, 2018).

Porter (1990) and Lue (2010) both articulate that a highly educated workforce is essential for a nation to adequately compete within the global market; thus, governments participate in the role of funding world-class higher educational programs with the intent of allowing the conditions for students of all economic brackets to participate in such prestigious programs by increasing the affordability for students and their families (Baum, 2007; Castleman, Long, & Mabel, 2017). The United States Government's Department of Education provides Billions of dollars annually in the forms of grants and loans. Additionally, state governments and private institutions also provide large sums of financial capital to students, to not only assist them in acquiring a quality education (Baum, 2007), but to advance the nation's, and industries, international competitive advantages (Porter, 1990).

To effectively measure the financial activities of loans, grants, and other costs, the average amount of financial student aid per student, the total number of federal student aid grants to the institution, and the total value of all financial student aid grants to the institution were used to describe the available resources to the student population. Consequently, the tuition cost variable describes the average tuition cost per student and whether an institution provides a payment plan to their students (US Department of Education, 2020). This flow of financial capital provided to the student, is contingent on the student's ability to be successfully admitted into a university system, and for the student to choose which university to attend. This free market exchange between competent students and higher educational institutions, coupled with available capital, creates the environment for both the student and the university to compete within an educational market and generates the concept of educational value (Gerardo & Pederzini, 2017; Chapman & Lounkaew, 2015; Castleman, Long, & Mabel, 2017).

Table 4

Descriptive Statistics (Value and Utility)

Variable	Obs	Mean	Std.Dev.	Min	Max
Students					
ACT Math	5,599	23	3	13	32
SAT Math	5,599	565	61	389	750
Student Retention Rate	5,599	70	16	0	100
Student Faculty Ratio	5,599	15	6	1	78
Faculty Total	5,599	334	644	0	19,285
Aid and Tuition					
Average Amount	5,599	$6,819	$6,890	$0.0	$44,406
Number of Grants	5,599	180	306	0	4,206
Grant Total	5,599	$2,190,000	$4,340,000	$0.0	$57,100,000
Payment Plan	5,599	88.8%	31.6%	0.0%	100.0%
Tuition Cost	5,599	$13,865	$9,041	$0.0	$91,706

Note. Adapted from the National Center for Education Statistics (NCES) (US Department of Education, 2020).

Freedom of Information Act logs

FOIA data, or more accurately described as, FOIA logs, is a list of formal information requests to the US Government; a FOIA log contains the name of the organization requesting the information, followed by the year of submission, the agency the FOIA request was submitted to, an identification number or request ID number, and the request description. Due to the large scope of the US Federal Government, this analysis truncated its FOIA data collection efforts to the 23 governmental agencies and departments that provide grant funds to higher educational institutions (US Health and Human Services, 2019). As of the time of this documents publishing, 14 of the 23 agencies either provided their logs via a FOIA request, or their logs were available on an open governmental source website (See Appendix 2, Comprehensive List of Agencies and the Current Status of the Collected FOIA Logs). Between the years of 2005 and 2020, 370,000 individual FOIA requests were collected; of those, 10,149 FOIA request were made by educational institutions and are the subject of this analysis.

Table 5

Descriptive Statistics (FOIA Distribution by University Segment)

	Institutions				Requests	
Segment	Non- FOIA	FOIA	Total	%	Total	%
Differentiation Focused	1,042	376	1,418	67.02%	1,783	81.0%
Differentiation	1,292	167	1,459	29.77%	363	16.5%
Cost Leadership	1,230	13	1,243	2.32%	19	0.9%
Cost-Focused	1,474	5	1,479	0.89%	35	1.6%
Total	5,038	561	5,599	100%	2,200	100.00%

Note. The majority of higher-educational institutions that engaged in information acquisitions behaviors are members of the differentiation-focused segment closely followed by differentiation.

Table 6

Descriptive Statistics (FOIA Distribution by Agency)

Agency	Total	%
Securities and Exchange Commission	4,306	42.43%
United States Department of Education	1,529	15.07%
United States Department of Health and Human Services	1,246	12.28%
National Institutes of Health	1,103	
Center for Disease Control	143	
National Science Foundation	1,126	11.09%
Environmental Protection Agency	818	8.06%
United States Department of Defense	529	5.21%
The Veterans' Administration	205	2.02%
United States Department of Agriculture	151	1.49%
United States Agency for International Development	87	0.86%
National Aeronautics and Space Administration	62	0.61%
United States Department of Transportation	50	0.49%
Institute of Museum and Library Services	39	0.36%
Corporation for National and Community Service	1	0.01%
Total:	10,149	100%

Note. The total column indicates the total number of FOIA requests submitted by higher educational institutions to US Federal Governmental agencies or departments. The National Institutes of Health and the Center for Disease Control are subordinate agencies under the Department of Health and Human Services.

INFORMATION ACQUISITIONS

Universities and community colleges of all sizes are developing competitive advantages through the higher educational market with the intention of ensuring its survival. The next question is: what role do information acquisitions play in a university's ability to develop such competitive advantages? As higher educational institutions struggle to meet the needs of many stakeholders within the market of higher education through a dynamic global economy, educational institutions are looking toward traditional business strategies such as information acquisitions, big data, and smart analytics to develop competitive advantages (Daniel, 2015). Gathering actionable semi-proprietary information within the marketplace to reduce information asymmetries is difficult, prompting many organizations to hire individuals from a competitor, observe open corporate behaviors, or purchase information to aid in understanding a developing and dynamic market (Gordon, 2014; Nayyar, 1990); furthermore, organizations locked in competition often engage in outright spying with the intention of gaining an advantage over their competitor (Mesly, 2014; Carson, 2012). Gerardo & Pederzini's (2017) study of competitive advantages between universities found that the competition between universities was so fierce that a study participant made the statement that "universities continuously watch [what] the other is doing and/or which is doing better" (p. 411) and that many of the study participants were guarded with their statements as not to reveal their current strategies (Gerardo & Pederzini, 2017). A strategy used by many organizations to legally acquire semi-proprietary information on competitors is to utilize the US Federal Government; which consequently, possesses vast quantities of information and is available, if requested to and granted by the holding agency, to open disclosure through FOIA (Gargano, Rossi, & Wermers, 2016).

The Freedom of Information Act (FOIA) History

From the very early stages of the great experiment of the American democracy, the concept of the citizenry controlling and monitoring the actions of its government has reigned paramount. James Madison stated in 1884 that "a people who mean to be their own governors must arm themselves with the power which knowledge gives" (Smith, 1979, p. 1). The US Government took its first step toward open government between 1930 and 1940, when legislators realized "the executive branch of the government of the United States has grown up without plan or design like the barns, shacks, silos, tools sheds, and grades of an old farm" (Brawnlow, Merriam, & Gulick, 1937, p. 15). This statement written in 1937 outlined how the US Government ballooned from its humble beginnings into a large, complicated bureaucracy. The authors of the document understood the world was a much different place in the 1930s compared to the formation of the first government under the original executive of President George Washington. The authors also understood that this larger, more modern, and more complicated government required a mechanism for the people to understand and inspect its inner workings (Smith, 1979; Brawnlow, Merriam, & Gulick, 1937).

A set of US House of Representatives Debates, Reports, and Bills ensued through the 1930s that ultimately resulted in a climatic pass-over of Senate Bill 915 in early January 1940. In February of 1939, President Franklin Roosevelt commissioned a committee to study the Field of Administrative Law, and the committee was named as such. The culmination of this study and subsequent congressional actions formed the Administrative Procedure Act of 1946 (Smith, 1979). The Administrative Procedure Act was the first piece of legislation where citizens could

formally request information from their government, yet it also possessed the clause of "executive privilege", wherein heads of agencies could develop, on their own accord, local policies and procedures to withhold information citing national security. The legal doctrine of executive privilege was upheld by the US Supreme Court in 1951 during the case of ***Reynolds v. The United States***, where the court upheld the executive's right to withhold "protected military and state secrets" (Castellano, 2015, p. 601). Congress upheld the court's standard by enshrining the legal doctrine of executive privilege within the amendment of 1953, coined the "housekeeping statute" (Zappile, 2014, pp. 2-3; Smith, 1979, p. 3).

In 1954, Dr. Cross, a prominent member of the Society of Professional Journalists and a leader in the political and social movement of open government, published "The People's Right to Know," an analysis of the US Government's open government policies as well as a history to this point. Dr. Cross and his research are credited for developing the modern open government concept and FOIA legislation that is enjoyed by the American public to this day. His research followed the history of open government from the inception of the American experiment to the publishing of his work in the mid 1950's (Zappile, 2014; Smith, 1979). The primary observation of open government studies, and the pivotal concept found and documented within Dr. Cross' work, is that the government is often reluctant to share information either due to embarrassment or national security (Smith, 1979, p. 1).

Furthermore, Zappile (2014) describes the turbulent state of political affairs that permeated the consciousness of the American society throughout the 1950s and helped to drive better open government legislation (Zappile, 2014). The domino effect of Communism was a real and perceived threat to the US Government during the tumultuous early years of the Cold War and assisted in driving the need for more surveillance of subjects and secrecy of governmental information (p. 5). Journalists feeling the pressure of a more closed Government during the "era of McCarthyism and J. Edgar Hoover's Federal Bureau of Investigation than ever before" (p. 2) prompted an equal drive for more responsive open government policies. The Legislative Branch, lobbied by journalist organizations, worked through the late 1950s and into the 1960s, at which point the Freedom of Information Act was reluctantly signed into law by President Lyndon B. Johnson on the Fourth of July 1966. From the onset of its signing, the Johnson Administration saw the law as a threat to the administration and national security; accordingly, President Johnson leveraged the Department of Justice to curtail the powers of the law and diminish its intended effect (Zappile, 2014).

As history meandered through the 1970's and into the 1990's, presidential administrations softened their outlook on the law's functions, and governmental departments developed time-honored policies, procedures, and enforcement measures to responsibly process and issue governmental information to the people. A notable milestone during this period is Attorney General Janet Reno's standard of "Foreseeable Harm," outlined within a memorandum published in October of 1993 (Justice U. D., 1994). Foreseeable harm calls for agencies to apply the standard that if the government were to release a piece of information to the public that information "would not pose any harm to an individual, an entity or the nation" (Justice U. D., 1994; Carson, 2012). This standard of foreseeable harm is the current standard used throughout the US Government today.

The Commercial Use of FOIA

The original intent of FOIA was to provide a window into the inner workings of the US Government, with the original lobbyists of the Act being the journalistic community. However; "a common complaint is that the major beneficiaries of the Act continue to be corporations and other private interest groups [that] use it profitably to secure information on the activities of their competitors" (Smith, 1979, p. 12). A rough aggregate of commercial vs. journalistic FOIA requests from the top five FOIA request receiving agencies reveals that 71% of all FOIA requests are of a commercial nature; additionally, third-party FOIA companies are requesting large amounts of information from the US Federal Government then selling that information to other organizations (Kwoka, 2016). Moreover, Mullins (2013) adds to Kwoka's research that the direct financial impact of selling information is numerically unknown, although it can be hypothesized that the third-party FOIA request apparatus is "a thriving industry unto itself" (Mullins, 2013, p. 3).

Figure 2

Word Cloud of FOIA Request Narratives

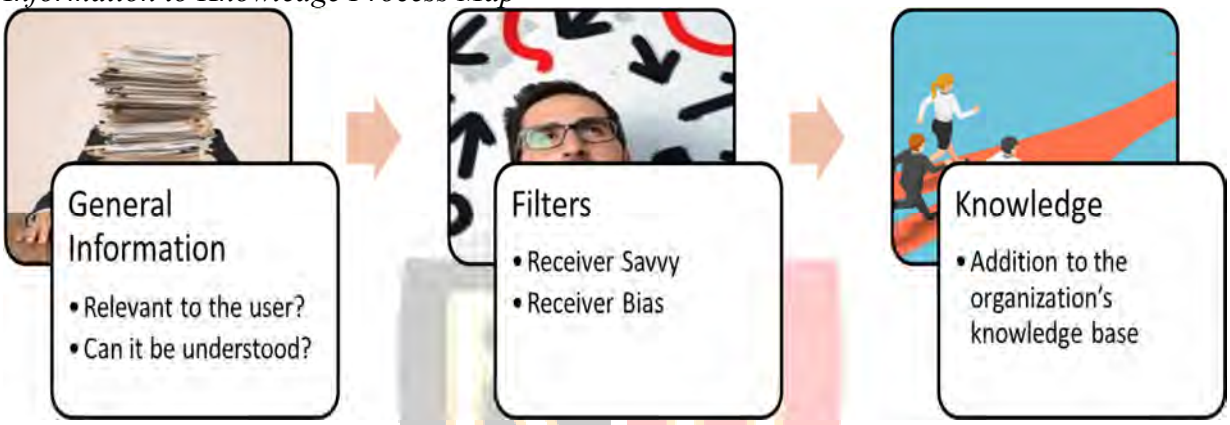
Note. The word cloud indicates a selection of request verbs such as records, documents, information, exhibits, construction, proposal, pharmaceuticals, complaint, or investigation.

The contents of a granted FOIA request are as broad as the application developed by the requestor; in other words, you get what you ask for. The FOIA data collected for this analysis that was submitted by, or on behalf of, higher educational institutions describe subjects such as, but not limited to the exhibits surrounding litigation or investigations, contents of governmental grant proposals submitted by other colleges and universities, the status of pharmaceutical trials or environmental proceedings, or the substance of correspondence between corporations and

government officials. For example, Brown Law School submitted no fewer than 546 FOIA requests specifically bidding for information from the Securities and Exchange Commission (SEC) on publicly traded corporations; George Mason University requested copies of the minutes from the Defense Science Board Meeting, 10-11 December 1958 and from the Report of Task Group on Limited War, December 31, 1958 from the US Department of Defense in 2010 (US Department of Defense, 2010); and the University of Wisconsin requested "all records about the now closed complaint for Docket No. 09072205 concerning the University of California Irvine" (US Department of Education, 2014).

Figure 3

Information to Knowledge Process Map



Note. Knowledge is synthesized information, which is collected over time, to become an organization's knowledge base.

Turning Information into Knowledge

General information, such as information acquired from the US Government through a FOIA request, can be in the form of reports, spreadsheets, graphs, tables, recordings, or data files and is inherently formulated for particular audiences or a specific purpose. For example, a piece of information could be a data file specifically designed to be read by a particular computer program, or a word document formatted for a committee's consumption. The receiver must have the ability to understand the information and recognize its relevance to the organization. Possessing the savvy to make inferences between the collected information and working to push off biases is how an organization is able to develop a comprehensive understanding of the environment being analyzed. Lastly, once the information is understood by the organization as relevant, it becomes part of the organization's knowledge base (Kress, 1993).

Time is an important factor in developing a knowledge base as information and knowledge is not a one-time occurrence. Knowledge is built up over time, one piece of information often generates another question, which triggers the quest for another piece of information (Kress, 1993; Gargano, Rossi, & Wermers, 2016; Smith, 1979). This ongoing movement of information acquisitions is the catalyst of how organizations generate an effective knowledge base that can be utilized to drive sound business decisions and generate good competitive advantages. Thus, it is hypothesized that FOIA information is being requested, and utilized by higher educational institutions to develop competitive advantages within the market

of higher education. Subsequently, this hypothesis is rooted within business literature; businesses utilize data acquired through FOIA to develop competitive advantages throughout many industries such as investment, construction, and law (Kwoka, 2016; Gargano, Rossi, & Wermers, 2016; Mullins, 2013; Daniel, 2015).

SAMPLE

The sample was developed from the US Department of Education's NCES database which represents all registered higher educational institutions operating within the United States. Overall, the data provided by the Department of Education is complete with missing data primarily representing itself in two forms, the first being whether a higher educational institution is closed, or if the observation is a system or office that administers to a broader educational system; such as, the University of Alabama System. This is easily explainable as office systems do not employ faculty, or librarians, nor enroll students. Likewise, if a higher educational institution is closed, or described by the Department of Education as the death year, then the fact remains that no students are enrolled, no faculty is employed, and no libraries are open. Periodically, there are higher educational institutions within this population that were not closed, or present themselves as university systems, and their missing data exceeds 90% of the variables within the total record. Randomly selecting a few of these institutions and conducting an open-sourced internet search of their records indicates that these institutions possess a very limited front to the communities they serve. This analysis sees all higher educational institutions as immensely valuable to the nation as it seeks to gain a competitive advantage within the global market; however, the fact that these institutions provide such a small effort in reporting compliance, and the numerical number is quite low, the observations were omitted from the analysis. Cluster outliers are institutions that presented themselves so far from the population mean that they were omitted from the analysis; the specific method to identify these outliers is further defined with in the section that describes the cluster analysis.

Table 7

Sample Disposition	N	%
Start	6,857	
Death Year (closed)	324	5%
University Systems/Other	205	3%
Factor Sample	6,328	
Cluster Outliers	729	11%
Sample	5,599	82%

Note. Missing data primarily represents itself in two forms, the first being whether a higher educational institution is closed or if the institution is a system, or office, that administers to a broader educational structure and is not an educational institution at all.

METHODS

The analysis began with a set of data collection methodologies that encompassed acquiring data from open-sourced governmental internet sites, to numerous formal data requests to the US Government. A factor and cluster analysis were used to confirm the binning of variables against Porter's theories of competitive advantage and market strategies outlined within the literature review. The truncated variables were then used to develop a logistic regression to test the hypothesis of information acquisition and its influence on competitive advantage. Lastly, a qualitative data analysis was performed to substantiate the findings of the quantitative analysis.

Data Collection Methods

Two primary methods were employed to collect the data necessary to conduct the analysis. The first was the collection of data from open-sourced websites and the second data collection method was the systematic formal solicitation of governmental information.

Open-Sourced Data

The NCES database describes higher educational institutions' makeup and characteristics and was acquired through an open-source website. The NCES data was provided through 14 individual Microsoft Access databases representing each year between 2005 and 2018. Each file contained between 20 to 30 individual tables representing different modalities such as finance, student enrollment, and demographics. An SQL syntax was developed to automate the process of exporting database tables into spreadsheets that a statistical data software package could easily utilize to conduct the analysis. The Leiden ranking is a classification methodology developed by the University of Leiden that describes and ranks universities by their publishing behaviors. The ranking was available on the university's website and provided in the form of a spreadsheet. Additionally, a set of supplementary qualitative data was collected in the form of, but not limited to, professors curriculum vitae's, published journal contributions, and published grant award results to further expand, and confirm the validity of the quantitative analysis.

Formal Request

The vast majority of the formal FOIA requests submitted to the US Government to facilitate this analysis were the request of FOIA logs. There are two important preliminary research steps that should be taken before submitting a formal FOIA request to the US Government to ensure that the response is both accurate and timely. The first step is to search open-source governmental websites to determine if the desired information is readily available; thus, negating the need for a lengthy or costly FOIA request. If the information is unobtainable through open-source governmental websites, it will be necessary to specifically identify the open-source information gap, as it will greatly aid in authoring a future FOIA request. Additionally, the requestor should closely survey open-sourced governmental websites to identify the correct agency before submitting a formal request. It may not be completely obvious which agency provides what information without conducting this preliminary research. For example, the Department of Veterans' Affairs does not provide its awarded contracts, this data is housed and maintained by the Treasury Department. A close and exhaustive search of open-

sourced governmental websites would make this fact known and better tailor a FOIA request to meet the desired intent of a timely and accurate acquisition of information.

Once the preliminary research has been conducted the conditions are set to submit a formal request for information through FOIA, as the full data gap and proper agency has been identified. Each agency possesses different FOIA submission formats such as, but not limited to, e-mail, fax, web-portal forms, and/or standard forms. Additionally, the Department of Justice maintains a single user-friendly web portal that aids in the facilitation of FOIA requests to many governmental agencies. No matter the format for submission, a FOIA request consists of identifying data such as the requestor's name, phone number, e-mail address, organization, followed by a brief but descriptive narrative of requested information, and whether the requestor is willing to pay a fee for the information. Some agencies request additional information, such as the intention of the requested information (e.g., commercial or educational), as this element can be used by the agency when assessing fees (Justice U. D., 2019).

An interesting facet that was discovered during this analysis is the concept of previously conducted congressional oversight. During the execution of Congress' congressional oversite responsibilities, data is requested by Congress from many US Government agencies to conduct the oversight. At the conclusion of the oversight, much of the data is published in open-source venues that can then be capitalized on for future research and cited in FOIA requests to fill in any data gaps within the governments open data sources. For example, Darrel Issa, Republican from California, serving as the Chairman, Committee on Oversight and Government Reform submitted a FOIA request to the Institute of Museums and Library Services requesting all FOIA logs (Bitter, 2011). The FOIA request and FOIA logs were obtained by this analysis prompting a FOIA request to the agency in question for the remaining logs between 2011 and 2019. Unfortunately, the agency did not honor the request and stated that the only reason why the FOIA logs were generated for 2011 and preceding is because a member of Congress requested the logs, and the agency is not obligated to generate records, only release them if in their possession. Nonetheless, congressional oversight allowed this analysis access to FOIA data from the Institute of Museums and Library Services between the years of 2005 and 2011.

One must be mindful of exceptions, classified or sensitive information will slow an agency's response time. Unless the request for information encompasses sensitive information, the request should be constructed to omit this information and/or communicate this fact to the Agency in follow up phone calls or e-mails. An example of exceptions arose during this analysis, when a formal request to the National Archives for all FOIA logs generated by the agency was estimated to take three to five years to complete. A phone conference with the agency revealed that the agency was in possession of over 350,000 FOIA requests and that many contained sensitive information pertaining to service members' records. After a review of the study thesis with the aid of government officials, it was determined that service members' archived records would not be necessary; hence, the FOIA request was amended to omit the service members' archived records, substantially reducing the agency's response time (see Appendix 1: FOIA Comprehensive List of Statutory Exceptions).

Each step of the FOIA process is well documented by the agency through correspondence in the form of official letters, as this is a legal process enforced by statute. These letters are descriptive and are designed to inform the requestor of the action's status, and should prompt any questions of the requestor, or actions necessary to ease the request. To increase the likelihood of success, it is recommended to contact the agency to address any questions or clear up any misunderstandings, be positive, show a genuine interest in the agency's mission, and offer

transparency regarding the study thesis and the eventual benefit of the findings to society. It has been the experience of this analysis that government officials and employees are eager and willing to aid in a quest for information.

Cleaning and Matching the FOIA, NCES, and Leiden data

Numerous governmental agencies and departments provided an excess of 1,000 individual FOIA documents that described who requested information from the government and what that information consisted of. FOIA log data is raw, and is provided in many forms such as, but not limited to, Portable Document Format (PDF), Excel Spreadsheets, Word Documents, Extensible Markup Language (XML), and even handwritten formats. Many methods were utilized to place this data into a uniformed medium for use by a statistical data software package. Adobe Acrobat's export feature was utilized to tabulate each PDF document into a spreadsheet, word documents were also exported or copy and pasted into a spreadsheet, and XML files were imported into Microsoft Access, then subsequently exported into a spreadsheet; lastly, handwritten documents or other scanned medium were manually entered into the desired format.

For this analysis, the string variable between the FOIA requesting organization, and the higher educational institution's name within the NCES, FOIA, and Leiden's datasets required matching or associating with each other; unfortunately, there was no primary key, or a unique identifier between the three datasets in order to facilitate this function. To overcome this obstacle, a parametric statistical model was utilized to match the string variables of the FOIA requesting organization, and the educational institutions' name between the three datasets. Although the statistical model identified and effectively matched approximately 75% of the string variables within each observation, some string variables were too disparate for the model to match; thus, a manual scrub of the observations ensured an accurate match between the FOIA, NCES, and Leiden datasets. Additionally, a set of open-source internet searches were conducted to positively identify subordinate activities and align them to the primary educational institution; for example, the Eller College of Management is associated with the University of Arizona.

Quantitative Methods

The quantitative analysis incorporated the four methods of imputation, factor, cluster, and logistic regression. Imputation was used to address the concerns of missing data. The factor and cluster analyses were utilized to confirm the assumptions developed through the literature review. Finally, the logistic regression analysis was used to formulate statistical inferences between information acquisitions and favorable outcomes measured through competitive advantages.

Imputation

Unfortunately, a small portion of the data provided by the Department of Education encompassed missing data; consequently, arbitrarily removing these observations would decrease the power of the analysis. To overcome this obstacle, a regression imputation method was employed to replace missing variables utilizing existing complete variables. Regression was utilized over other missing data techniques, such as mean imputation, because regression imputation better supports follow on statistical techniques such as a factor analysis. Before

implementing the regression imputation method, missing variables were closely analyzed to determine if they were missing, or if the missing variables were zero. For example, if an institution rendered a missing value for dormitory capacity, or the number of databases in a library, it was assumed that the value was zero. Opportunities to utilize logic to reduce or eliminate missing variables were also identified. For example, the faculty part-time rate was rendered to zero if the faculty full-time and faculty total variables were equal, the opposite was also true. After this analysis of missing variables was conducted, five variables were identified to be good candidates for a regression imputation method.

The regression imputation method utilized non-missing independent variables to predict the missing, or dependent variables, and is the total number of publications, total student body enrollment, number of physical library books, and the total number of programs offered. These variables were chosen because they are good broad indicators of a higher educational institutions' characteristics. Additionally, the process required an upper and lower limit applied to the missing values newly acquired value and was obtained by finding the minimum and maximum of the variable's population.

Table 8

Missing Data (Imputation)

	Missing	Upper Limit	Lower Limit
Dependent			
Student Faculty Ratio	4.32%	247	1
Retention Rate	15.9%	100	1
Salary	37.9%	$230,000	$1
ACT Math	84.9%	33	2
SAT Math	84.4%	800	2
Independent			
Publications	0.0%	-	-
Total Enrollment	0.0%	-	-
Books	0.0%	-	-
Programs Offered	0.0%	-	-

Note. After the use of logic was used to reduce the number of missing variables, five variables were identified as good candidates for a data imputation method.

Literature Confirmation

Higher education is a broad industry that encompasses thousands of institutions, millions of students, and accounts for billions of dollars. Facilitating the statistical techniques of factor and cluster analyses assisted in confirming the literature review and developed truncated variables suitable to test for information acquisitions behavior and how that behavior relates to the development of competitive advantages.

Factor Analysis

The factor analysis developed four factors that generally aligned itself into the binned variables of prestige and excellence, diversity and community, value and utility, along with variety and flexibility developed during the literature review and provides confidence that the literature review supports the theory of competitive advantage and can be effectively used to test the hypothesis of information acquisitions. The variables of the factor analysis were assessed to ensure that each variable was homogeneous and resides on a metric scale; thus, categorical and percentage variables were omitted from the analysis.

The data set used possessed 6,328 observations and 26 variables were utilized to perform the analysis which falls well within the acceptable limits of the sample size to observations ratio of one to ten. Bartlett's test was employed following a correlation matrix to ensure the variables are unequal rendering a ($p < 0.001$) with a degrees of freedom of 351 validating the assumption that the variables are not intercorrelated. Moreover, and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was performed to estimate the proportion of variance within the data rendering a KMO score of (0.911) further providing credence that the variables are not correlated and suitable for the analysis. After performing a principal-component factors analysis with the Henry Kaiser orthogonal varimax rotation method to maximize the squared loadings, four factors were generated that closely followed the binned variables developed through the literature review with a carminative eigenvalue value of (0.7677).

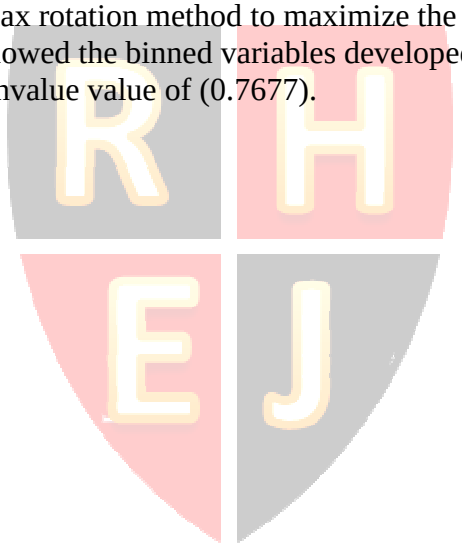


Table 9

Factor Analysis

Variable	Factors 1 Prestige and Excellence	2 Variety and Flexibility	3 Diversity and Community	4 Value and Utility	Uniqueness
Physical Library Books	0.8584				0.2211
All Publications	0.9473				0.0819
Top1% of Frequently Cited Journal Articles from the Same	0.9047				0.1542
Gold Publications	0.9371				0.1004
Number of Internationally Collaborated Publications	0.9359				0.1041
Total Instructional Faculty	0.8616				0.2002
Full-Time Instructional Faculty	0.5430				0.4772
Total Student Enrollment	0.8758				0.1237
Number of Offered Masters Programs	0.8968				0.1093
Number of Doctorate Programs	0.7279				0.3207
Liabilities		0.7478			0.3946
Expenses		0.9401			0.0965
Revenue		0.9441			0.0952
Federal		0.8030			0.3262
Private		0.8859			0.2134
Salary of Librarians Staff			0.8792		0.2177
Salary of Management Staff			0.8754		0.2120
Salary of Business Staff			0.8828		0.2036
Salary of Computer Staff			0.8893		0.1808
Salary of Community Service Staff			0.8608		0.2085
Salary of Service Staff			0.8363		0.2809
Salary of Administration Staff			0.8879		0.2018
Salary of Maintenance Staff			0.6665		0.4879
Faculty Salary				0.6143	0.3529
ACT Math75th Percentile				0.9279	0.1087
SAT Math75th Percentile				0.9276	0.0920

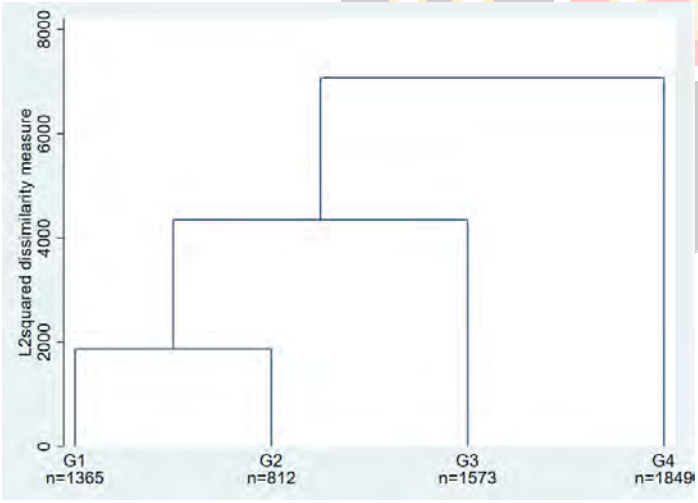
Note. The factor loading threshold for this analysis is set at $p < 0.490$

Cluster Analysis

The cluster analysis was performed utilizing the four factor variables of prestige and excellence, diversity and community, value and utility, along with variety and flexibility to confirm the grouping of higher educational institutions with Porter's generic strategies of cost-leadership, cost-focused, differentiation, and differentiation-focus. The higher educational institutions described within the dataset possessed a large variation of possible clusters prompting the need to identify outliers for removal from the model. To achieve this, the average distance from the typical respondent was calculated, and the 90th percentile of higher educational institutions was removed from the model. The Ward's hierarchical clustering procedure was utilized to determine the most appropriate number of clusters to apply to the analysis; additionally, the Calinski/Harabasz stopping rule confirmed Ward's cluster solution of four. The nonhierarchical clustering methods of kmeans, and kmedian were independently performed to optimize the cluster algorithms; the remainder of the analysis will utilize the kmeans clustering technique due to its favorable even distribution.

Figure 3

Cluster Analysis

Dendrogram	Clusters	Calinski/Harabasz pseudo-F
	2	3500.92
	3	4591.60
	4	**4873.49**
	5	4372.68
	6	4070.93
	7	3869.73
	8	3642.94
	9	3513.85
	10	3428.97
	11	3352.15
	12	3278.38
	13	3240.01
	14	3183.96
	15	3151.59

Note. The Calinski/Harabasz pseudo-F stopping rule and Wards cluster algorithm both indicate that a four-cluster solution is optimal.

Table 10

Cluster Analysis (kmeans)

			Prestige and Excellence		Variety and Flexibility		Diversity and Community		Value and Utility			
Cluster	N	%	Dormitory Capacity	Publication	Hybrid Learning	Federal Funding	African American	Hispanic	Published Tuition	Student Retention Rate	FOIA Schools	FOIA Requests
Differentiation Focused	1,418	27.1%	**959**	**26**	8.8%	$1,400	10%	14%	$12.0k	74%	376	1,783
Differentiation	1,459	25.2%	263	12	**14%**	**$1,900**	18%	14%	$7.1k	60%	167	363
Cost Leadership	1,243	23.4%	11	0	5.6%	$700	**22%**	**21%**	$4.0k	62%	13	19
Cost Focused	1,479	24.3%	6	0	2.6%	$860	19%	20%	**$3.8k**	**81%**	5	35
Total	5,599	100.0%									561	2,200
ANOVA P-value												
Ward's			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
kmeans			0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note. The variables selected to profile the clusters were chosen from the binned variable groupings generated through the literature review and were not part of the cluster analysis for the exception of publication and federal funding. Publication and federal funding specifically provided a unique window into the qualitative analysis and offered necessary context to the market segments

The variables of dormitory capacity, publications, hybrid learning, federal funding, African American, Hispanic, published tuition, and student retention rate were selected from the binned variable groupings generated from the literature review. The selected variables were not part of the cluster analysis for the exception of publication and federal funding as these variables provided a unique window into the qualitative analysis and offered necessary context to the market segments. These variables were chosen to confirm the validity of the cluster analysis and provide a theory-based interpretation of the clusters. A set of Analysis of Variance (ANOVA) models were then generated to test each cluster's distinct separation rendering a ($p > 0.05$) for each test, further providing credence that each cluster is significantly different from each other. The clusters generally align themselves to Porter's theory of Competitive Advantage developed through the literature review. Overall, differentiation-focused institutions excel in nearly all points of reference; however, the cluster analysis discovered unique advantages developed between market segments.

Infrastructure is an integral resource universities hold to develop effective curriculum in a host of disciplines (Schellekens & Van, 2003); consequently, the differentiation-focused market segment possesses the vast majority of the total dormitory inventory which is a good indicator of a universities total infrastructure. Additionally, "adding new knowledge to reputable publications" (Ali, Bhattaacharyya, & Olejniczak, 2010, pp. 164-165; Barron, 2016) is primarily performed by the differentiation-focused market segment. A student body's demographics are no longer predominantly young, resides on campus, or are inexperienced (Dawson, Burnett, & O'Donohue, 2006; Levin & Kater, 2012); flexible learning programs has allowed professionals to gain additional skills to advance their careers (Schellekens & Van, 2003). The differentiation market leads the higher educational industry in hybrid learning programs. The market sector of cost-leadership has developed the most diverse campuses across all market segments that not only foster diverse and well-rounded graduates ready for employment in industry (Franklin, 2013), but also broadens a university student demographic that increases the institutions recruitment opportunities (Rossi, 2009). The rising cost of higher education has "increased customer awareness" (Stodnick & Rogers, 2008, p. 116). Students, like all consumers, indicate if the institution they are attending is meeting their needs, and if a student is not satisfied with the institution, or the price does not justify the result, the student can opt to leave the institution (Liu, 2011; Rania, Siri, Bagnasco, Aleo, & Sasso, 2014). A university's retention rate is a major indicator of how a student perceives the quality of the institution and if the institution is meeting their needs and goals. Even though a cost-focused institutions tuition is by far the least expensive, the cost-focused institution's student retention rate is the highest rate of all university segments indicating that overall student satisfaction is respectable and the education provided possesses utility within the market (Liu, 2011; Rania, Siri, Bagnasco, Aleo, & Sasso, 2014).

Logistic Regression

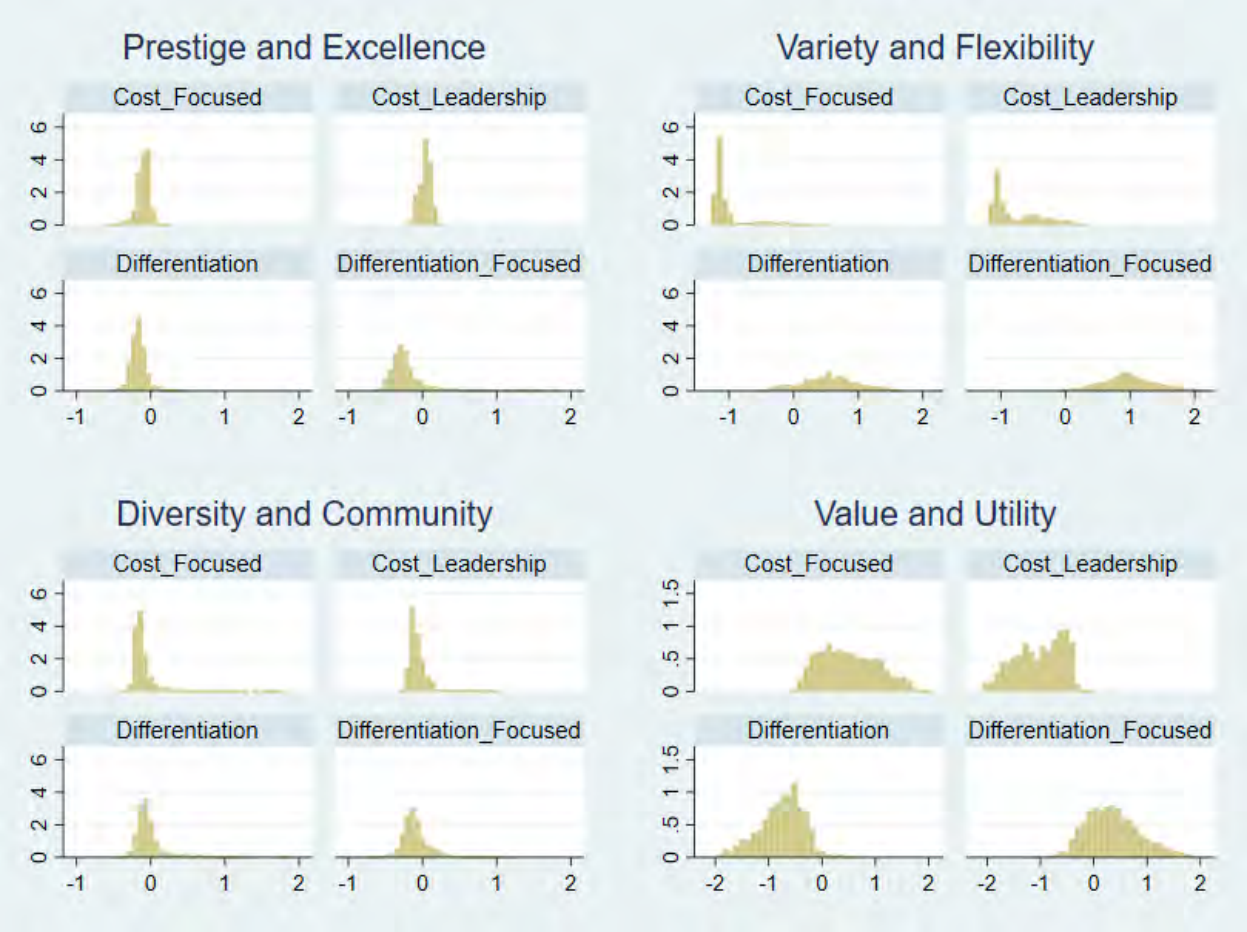
The dependent variable utilized to perform the logistic regression model is a categorical variable that indicates if a higher educational institution engaged in information acquisitions activity, or not, and is named DummyF. DummyF is accumulative, meaning that the variable indicates if a higher educational institution engaged in information acquisition behaviors during the year a FOIA request was submitted to the US Government, and all following years thereafter. Consequently, DummyF is zero for all years preceding the first FOIA request. The four independent variables used to perform the logistic regression model are prestige and excellence,

diversity and community, value and utility, along with variety and flexibility and were derived from the factor analysis; thus, ensuring the absence of multicollinearity, independence is secured, and each variable possesses a normal distribution for the exception of excellence under the cost-leadership and cost-focused segments. Lastly, each of the four separate logistic regression models possesses an excess of 1000 observations satisfying the variable to observation ratio of one over ten. The logistic regression model is also segmented between Porter's market segments of cost-leadership, cost-focus, differentiation, and differentiation-focus which was developed through the literature review and verified through a confirmatory cluster analysis.

$$ln\left(\frac{P_i}{1-P_i}\right) = \beta O_0 + \beta_1\, prestige\ and\ excellence_i + \beta_2\, diversity\ and\ community_i + \beta_3\, value\ and\ utility_i + \beta_4\, variety\ and\ flexibility_i + \varepsilon_i$$

Figure 5

Distribution of the Factored Variables



Note. The standard distribution associated with prestige and excellence, diversity and community, value and utility, along with variety and flexibility all indicate relative standard

distributions for the exception of diversity and community, and variety and flexibility under the cost-focused and cost-leadership segments.

The differentiation and differentiation-focused institutions contain most of the statistically significant results between FOIA activity and indicators of competitive advantages within all assessed factors, apart from flexibility. Overwhelmingly, prestige and excellence is the dominate segment influenced by FOIA activity indicating that faculty productivity associated with publishing, institutional infrastructure related to physical library size, a healthy student enrollment, curriculum development of doctorial and master's degree plans, and full-time faculty employment are the principal indicators of favorable FOIA activity. Variety and flexibility along with value and utility are statistically significant; however, the odds ratio is substantially less. Diversity and community is not statistically affected by information acquisition activities through the use of FOIA.

Table 11

Variable	**Prestige and Excellence**	**Variety and Flexibility**	**Diversity and Community**	**Value and Utility**	N
Differentiation Focused	† 64.60*** (-11.25)	† 3.151*** (-6.58)	1.169 (-0.42)	2.766*** (-6.44)	1,418
Differentiation	† 68.93*** (-6.88)	† 4.485*** (-7.02)	2.249 (-1.7)	2.043** (-3.16)	1,459
Cost Leadership	4523.5 (-1.72)	†† 47.77*** (-3.38)	3.49 (-0.78)	0.593 (-0.62)	1,243
Cost Focused	238492.5* (-2.19)	20.87 (-1.88)	6.968 (-1.54)	0.799 (-0.15)	1,479
Total					5,599

*** p < 0.01; ** p < 0.05; * p < 0.1

Note. The results of the logistic regression model are displayed as log ratios.

† the results of the model indicate that the differentiation-focused and differentiation market segments aligned to the prestige and excellence factored variable along with variety and flexibility present the strongest inference when applied to information acquisitions.

†† the cost-leadership and cost-focused market segments represent less than three percent of higher educational institutions that engage in information acquisitions activities; furthermore, the distribution of the variety and flexibility data is not normal. Thus, the statistically significant result is negated.

Qualitative

The qualitative analysis began with a limited coding process where the FOIA log narratives were manually reviewed and coded rendering the four themes of grant and publication

development, complaint, and investment. Narratives that were blank or indiscernible were coded as NA. Following the coding process, additional supplementary qualitative data was collected to generate a connection between FOIA collection activities and the development of competitive advantages within the market of higher education.

Codes

Narratives that were coded as publication development described the request of information pertaining to specific activities, organizations, or time frames. These types of request narratives tended to be tremendously broad in scope as the requests reference historical events, to environmental issues. The overall concept of the publication code is if information being requested could be used by a university to further research and develop a publication. Examples of FOIA requests that fall into the publication code are:

- Report addressed to the Secretary of Defense and prepared by General McChrystal, Commander USFOR-A, entitled Commanders Initial Assessment dated 30 August 2009, as originally prepared and submitted by General McChrystal and not as published in the Washington Post (US Department of Defense, 2010).
- Request access to and a copy of air quality reports of Newberg, Oregon. Specifically, from 1900 to present day. Additional[y], reports related to Newberg Mill, previously known as Charles Spaulding's Sawmill, Spaulding Pulp and Paper, Jefferson Smurfit Corp., SP Fiber Technologies and West Rock Newberg Mill (Environmental Protection Agency, 2016).
- Termination notice of an [Securities and Exchange Commission] (SEC) investigation into a stock trade by George W Bush (Securities and Exchange Commission, 2006).
- Referral from the Ronald Reagan Library through [Defense Intelligence Agency] DIA, requesting all materials relating to the United States relations with Vietnam for the period 1981-1989, specifically the issue of recognizing or not recognizing the Socialist Republic of Vietnam (US Department of Defense, 2006a).

Request narratives that specifically cite US Government grant proposals were coded as grant development; thus, aiding in the narrowing of information asymmetries when developing a grant proposal to secure federal funding. Language outlined within a grant coded FOIA request are the specific purchase request or grant identification numbers, the revealing of higher educational institutions that are known to have successfully secured federal funding through a federal provided grant, and the request of the successful application itself. A few examples of such information requests are:

- We are requesting a copy of the grant application submitted in 2017 by Onondaga Community College for funding through the FY 2017 Strengthening Institutions Program, CFDA 84.031 awarded in 2018. Specifically, we would [also] like a copy of the project narrative and project abstract. We are requesting a copy of the grant application by Ulster Community College for funding through the FY 2015 TRIO Student Support Services Program (CFDA 84.042), PR Award Number P042A150713. Specifically, we would like a copy of the project narrative, project abstract, and competitive preference priorities (US Department of Education, 2019a).
- I request that a copy of the following documents (or documents containing the following information) be provided to me -Child Care Access Means Parents in School (CCAMPIS) CFDA Number 84.335A OMB No. 1840-0737 Discretionary grant - The CCAMPIS Program

supports the participation of low-income parents in postsecondary education through provision of campus-based childcare services (US Department of Education, 2018).

The complaint code describes information requests that describe complaints made to the United States Government on behalf of a grieved party against an organization or entity. In respect to this analysis, higher educational institutions are the primary subject of complaints. Most complaint requests are made by the institution seeking the complaint made against the same institution. Examples of complaint information requests are:

- Requested a copy of the complaint and any supporting documentation filed against James Madison University in [Office for Civil Rights] (OCR) Complaint #11-14-2254 (US Department of Education, 2014a).
- Norwalk Community College is requesting a copy of OCR Complaint #01-18-2163 filed against the College (US Department of Education, 2018).
- Attorney for the recipient - Columbia College Chicago, as requested a "redacted" copy of the complaint in OCR Complaint #05-15-2549 (US Department of Education, 2016).

Lastly, the investment code describes inquiries of information pertaining to publicly traded corporations and are primarily targeted toward the Securities and Exchange Commission such as the “merger agreement involving Texas International Airlines” (Securities and Exchange Commission , 2016). The code of NA was provided to narratives that are nonexistent or so ambiguous that no discernable inference can be obtained such as “See attached letter” (Environmental Protection Agency, 2014). A blank FOIA request does not necessarily mean there was an absence of information passed from the US Government to the requesting institutions. FOIA request often possess attachments or follow on phone calls or e-mails that the FOIA log will not possess; thus, blank FOIA narratives should not be considered void of information exchange.

Table 12

Codes

	Prestige and Excellence	**Variety and Flexibility**				
Market Segments	Publication	Grant	Complaint	Investment	NA	Total
Differentiation Focused	560	686	140	360	37	1,783
Differentiation	113	195	42	1	12	363
Cost Leadership	8	9	2	0	0	19
Cost Focused	11	23	0	0	1	35
Total	692	913	184	361	50	2,200

Note. The vast majority of FOIA requests fall under the publication and grant development codes and align themselves with the differentiation-focused and differentiation market segments.

Overall, the population of FOIA requests used to facilitate this analysis comfortably fell within one of the five codes of publication, grant, complaint, investment, and NA. Consequently, the majority of FOIA requests nested under publication and grant development are closely associated with prestige and excellence along with variety and flexibility as these factored variables describe both publication development and elevated federal funding within their budgets as outlined through the cluster analysis. There does not appear to be any qualitative discernment with value and utility; however, it can be hypothesized that when a university develops competitive advantages with grant and publication development the positive impacts are experienced throughout the institution.

Following the coding process, additional qualitative data was sequentially gathered to create a link between information acquisition behaviors through the use of FOIA and a discernible development of either a successful grant award or a published product. This process consisted of first identifying institutions, through the quantitative analysis, that displayed evidence of developing competitive advantages using information acquisitions as part of their business strategy. Next, the descriptive narratives contained within the FOIA logs, submitted by those higher-level educational institutions, were then examined, and compared to supplementary collected qualitative data that came in the form of open-sourced documents from those targeted educational institutions. Supplementary qualitative data came in the form of, but not limited to, professors curriculum vitae's, published journal contributions, and published grant award results as these documents provided evidence of favorable associations between information acquisition behaviors and the development of competitive advantages.

The qualitative research indicates that acquired information from the US Government is an effective way to explore rich subject matter in numerous disciplines such as the environment, technology, and national security that would support faculty productivity through publications. At the same time, higher educational institutions are also businesses that require information to narrow information asymmetries in emerging market forces, or competitors, when shaping effective grant proposals to secure funding to advance student enrollment, along with infrastructure and curriculum development. The following six stories from four universities are examples of how an institution could use semi-proprietary information from the US Government to advance their competitive advantages. Additionally, appendix three contains a set of complementary stories that are associated with higher educational institutions that were identified to be outliers through the cluster analysis; thus, not utilized to support any findings within this study. Nonetheless, the stories do provide a window into the functions of grant and publication development and could be used to further any future analysis.

The following stories are presented under the market segments of differentiation-focused and differentiation as these markets overwhelmingly represent the majority of the institutions that engaged in information acquisition behaviors. Furthermore, the factored variable groupings of prestige and excellence, along with variety and flexibility describe behaviors of publication development and securing federal funding; thus, were utilized to drive the qualitative analysis.

Table 13

Qualitative Analysis

Market Segments	**Prestige and Excellence** Publication	**Variety and Flexibility** Grant
Differentiation-Focused	Vermont Law School Publication pertaining to froth floatation discharge during mining operations throughout the United States and its legal impacts Contributions to a publication referencing watershed protections in South Carolina Randolph-Macon College Development of a publication outlining the history of Jewish holdings in Iraq	Fitchburg State College $1.2M Department of Education Upward-Bound Math and Science grant award designed to increase enrollments into the math and science disciplines Augusta University $2.3M National Institutes of Health grant to study lung disease
Differentiation	University of North Carolina Publication development on the history of the Attica Prison Riot resulting in a ***Pulitzer Prize***; the incorporation of the material into a law course curriculum	Albright College Two grants awards from the Department of Education valued at $752,322 for the procurement of laboratory equipment The award of two Fulbright-Hays grants to further international interchanges in South America

Publication Development

Vermont Law School is a private law school located in South Royalton, Vermont that specializes in environmental, food, and energy law and is a member of the differentiation-focused market segment. The Vermont Law School submitted three FOIA requests to the Environmental Protection Agency in 2009 requesting information on froth flotations caused by milling operations (Environmental Protection Agency, 2009); subsequently, Professor Mark Latham published a paper within the Virginia Environmental Law Journal about mining operations and the impact of froth flotations on the environment (Latham, 2010). Additionally, the Vermont Law School submitted a FOIA request to the Environmental Protection Agency requesting "data relating any environmental information pertaining to water quality in Lake Hartwell and the Tugaloo River Branch water" way (Environmental Protection Agency, 2010). Consequently, in the winter of 2010, Professor Cooper contributed to the South Carolina Voter where the water quality of the Lake Hartwell and the Tugaloo River Branch were discussed (Yainsac, 2010).

The University of North Carolina is a large public university system that oversees a set of campuses throughout the state of North Carolina. The university submitted a FOIA request to the US Department of Defense in 2009 requesting "all documents related to the Army National Guard Headquarters that mentioned the Attica State Correctional Facility" (US Department of Defense, 2006); Professor Thompson, was a member of the North Carolina History Department between 1997 to 2009 and won a Pulitzer Prize for her work on the 1971 Attica prison riots (Inside UNC Charlotte, 2017). Additionally, the University of North Carolina offers a course in the Use of Force Policy in Criminal Justice where the Attica Prison riot serves as a subject control event for the course (The University of North Carolina).

Randolph-Macon College is a small private liberal arts college located in Ashland, Virginia which specializes in the study of civilizations, arts and literature, natural and social sciences, mathematics, foreign languages, and wellness. Randolph-Macon submitted three FOIA requests between the years of 2005 and 2006 requesting information for the US Department of Defense requesting "Iraqi government documents captured by U.S. Army forces in Baghdad, Iraq, in May 2003"; furthermore, the requests go on to specifically request information the activities of "sixteen soldiers from the U.S. Army's Mobile Exploration Team Alpha [that occurred on] 6 May 2003" (US Department of Defense, 2005, 2006). Subsequently, Professor Michael Fischback published an article in the 2008 fall addition of the Middle East Report about Jewish property in Iraq. Specifically, the article cited the US Army's Mobile Exploration Team Alpha's operation that occurred on 6 May 2003. The operation colluded with Iraqi intelligence along with members of the Iraqi National Congress to secure culturally valuable documents, scrolls, and artifacts of Jewish history in Iraq (Fitchbach, 2008; Fischbach, 2020).

Grant Development

Fitchburg State College is a small liberal arts public college located in Massachusetts that prides itself on its nursing, media, education, business, and industry technology programs and is a member of the differentiation-focused market segment. Fitchburg College submitted a FOIA request to the Department of Education in 2016 requesting the "four top scoring applications funded" for the Upward Bound grant, specifically for math and science CFDA# 84.047 (US Department of Education, 2016). The Upward Bound grant is a grant provided by the US

Department of Education designed to “increase the rate at which participants complete secondary education and enroll in, and graduate from, institutions of postsecondary education” (US Department of Education, 2020). Subsequently, Fitchburg State College won a $1.2M Upward Bound Math and Science Program CFDA# 840.47 grant in September 2017 (US Department of the Treasury, 2020).

Augusta University is a public research institution and medical center located in Augusta, Georgia and is a member of the differentiation-focused market segment. Augusta University engaged in an extensive FOIA collection campaign in the years of 2017 and 2018 to the National Institutes of Health (NIH). One of the FOIA requests solicited the “research strategy and specific aims sections of the most recently awarded grant application for: 1) R01HL125522, 2) R01HL125440, and 3) R01HL133046” (National Institutes of Health , 2018). The Federal Award Identification Number (FAIN) of R01HL133046 correlates to a M2.6$ research grant awarded to the Baystate Medical Center located in Springfield Massachusetts to study lung disease under the Catalog of Federal Domestic Assistance (CFDA) program of 93.838 (US Department of the Treasury, 2020d). Consequently, Augusta University won two CFDA 93.838 grants from the National Institutes of Health worth a combined M2.3$ in 2018 and 2019 (US Department of the Treasury, 2020b; US Department of the Treasury, 2020c).

Albright College is a small private liberal arts institution in Pennsylvania that features a host of degree programs ranging from technology, language, to fashion and is a member of the differentiation market segment. Albright College engaged in thirteen FOIA requests to the US Department of Education between the years of 2009 to 2015. Two requests were made referencing the Department of Education’s “Major Research Instrumentation Program (MRI)” and the Science, Technology and Engineering (S-STEM)” grants between 2009 and 2011 (National Science Foundation, 2009; US Department of Education, 2011). Consequently, Professor Sonntag of Albright College’s Department of Chemistry and Bio-chemistry won an S-STEM grant worth $627,322 between the years of 2014 to 2018 and an MRI grant worth $125,000 to procure a low-voltage micron microscope (Sonntag, 2020). Albright College also submitted two FOIA requests to the US Department of Education referencing the Fulbright-Hays Grant (US Department of Education, 2014; US Department of Education, 2013); Consequently, Professor Jogan was awarded two Fulbright-Hays grants to facilitate an education interchange between the United States, Chile, and Peru (Jogan, 2020).

DISCUSSION AND CONTRIBUTIONS TO THE LITERATURE

Undoubtedly, the use of information acquisitions is not the single contributing factor of institutions developing competitive advantages over institutions that do not engage in information acquisitions behaviors within the same market segment. However, the evidence does suggest that FOIA activity is a healthy contributor in elevating faculty productivity associated with publishing and is a prominent contributor to a higher educational institutions’ prestige and excellence. Institutions that engage in information acquisitions behaviors possess more robust libraries, healthy student enrollments, and more extensive master’s and doctoral programs over institutions that do not engage in information acquisition activities. Specifically, this analysis provides evidence that higher educational institutions use information acquisitions to conduct research to explore rich subject matter in numerous disciplines to facilitate faculty productivity through publication, and to close information asymmetries between US Government grant

issuing agencies and higher educational institutions before submitting a competitive grant proposal.

Study Limitations and Opportunity for Future Analysis

With the abundant evidence of information acquisitions behaviors bestowed by higher level educational institutions to develop competitive advantages within the educational market, "one would expect to find a burgeoning public administration literature on FOIA. However, most FOIA-related research focuses on broader normative or legal issues" (AbouAssi & Nabatchi, 2018, p. 1). Even though FOIA has been a part of the federal bureaucracy since 1966 and millions of FOIA requests have been submitted, there is astonishingly little analysis conducted on its administration, effectiveness, and the content of disclosed information through FOIA (AbouAssi & Nabatchi, 2018); thus, "the practice of commercial FOIA requests has never been given an in-depth academic treatment" (Kwoka, 2016, p. 9). The subject of information acquisitions using FOIA to broaden a competitive advantage within academia has been a sparsely studied topic, if studied at all. This limited body of existing academic evaluation provides considerable opportunity for future study and analysis.

This analysis utilized a binary dummy variable where the indicator was a one or a zero; meaning that the variable indicates if a higher educational institution engaged in information acquisition behaviors during the year a FOIA request was submitted to the US Government, and all following years thereafter. The statistical method used to perform the analysis was a logistic regression model which performed an effective analysis. However, the development of a discrete, or continuous, variable that represents FOIA activity on a scale would greatly increase the power of a future analysis. Moreover, this analysis provided the opportunity to identify individual higher educational institutions, professors, and administrators that engaged in information acquisitions activities that achieved a favorable outcome in either securing funding or developing publications. Interviewing these individuals would be of great value in further understanding the methods, motivations, and effectiveness of information acquisition activities when administering to an academic institution or developing academic publications. It is also believed that interviewing the individuals that engage in such activity may open additional study hypothesis opportunities within the broader subject of information acquisitions.

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APPENDIX

Appendix 1:

Exemptions

Exception	Narrative
(b)(1) (A)	Specifically authorized under criteria by an executive order to be kept secret in the interest of national defense or foreign policy and (B) are in fact properly classified to such Executive Order #12958 (3/25/03).
(b)(2)	Related solely to the internal personnel rules and practices of an agency.
(b)(3)	Specifically exempted from disclosure by statute (other than section 552b of this title), provided that such statute (A) requires that the matters be withheld from the public in such a manner as to leave no discretion on issue or (B) establishes particular criteria for withholding or refers to particular types of matters to be withheld.
(b)(4)	Trade secrets and commercial or financial information obtained from a person and privileged or confidential.
(b)(5)	Inter-agency or intra-agency memorandums or letters that would not be available by law to a party other than an agency in litigation with the agency.
(b)(6)	Personnel and medical files and similar files, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.
(b)(7)	Records or information compiled for law enforcement purposes, but only to the extent that the production of such law enforcement records or information: A. Could reasonably be expected to interfere with enforcement proceedings; B. Would deprive a person of a right to a fair trial or an impartial adjudication; C. Could reasonably be expected to constitute an unwarranted invasion of personal privacy; D. Could reasonably be expected to disclose the identity of confidential source, including a state, local, or foreign agency or authority or any private institution that furnished information on a confidential basis, and, in the case of a record or information compiled by a criminal law enforcement authority in the course of a criminal investigation or by an agency conducting a lawful national security intelligence investigation, information furnished by a confidential source;

	E. Would disclose techniques and procedures for law enforcement investigations or prosecutions or would disclose guidelines for law enforcement investigations or prosecutions if such disclosure could reasonably be expected to risk circumvention of the law, or;
	F. Could reasonably be expected to endanger the life or physical safety or any individual.
(b)(8)	Contained in or related to examination, operating, or condition reports prepared by, on behalf of, or for the use of an agency responsible for the regulation or supervision of financial institutions.
(b)(9)	Geological and geophysical information and data, including maps concerning wells.

Note. Comprehensive List of Statutory Exemptions (US Department of Justice, 2020a)

Appendix 2:

Comprehensive List of Agencies and the Current Status of the Collected FOIA Logs

Variable	Variable label	Disp	Obs
DOD	United States Department of Defense	*	529
DoE	United States Department of Education	*	1,529
VA	United States Department of Veterans' Affairs	*	205
EPA	Environmental Protection Agency	*	818
NASA	National Aeronautics and Space Administration	*	62
NSF	National Science Foundation	*	1,125
IMLS	Institute of Museum and Library Services	*	39
USAID	United States Agency for International Development	*	87
CNCS	Corporation for National and Community Service	*	1
USDA	United States Department of Agriculture	*	151
DOC	United States Department of Commerce	*	0
DOE	United States Department of Energy	***	0
HHS	United States Department of Health and Human Services		
NIH	National Institutes of Health	*	1103
CDC	Center for Disease Control	*	143
DHS	United States Department of Homeland Security	***	0
HUD	United States Department of Housing and Urban Development	***	0
DOI	United States Department of the Interior	***	0
DOJ	United States Department of Justice	***	0
DOL	United States Department of Labor	*	0
DOS	United States Department of State	***	0
DOT	United States Department of Transportation	*	50
TREAS	United States Department of the Treasury	*	0
NARA	National Archives and Records Administration	***	0
NEA	National Endowment for the Arts	***	0
NEH	National Endowment for the Humanities	***	0
SBA	Small Business Administration	***	0
SSA	Social Security Administration	***	0
SEC	Securities and Exchange Commission	*	4306
			10,149

Note. FOIA logs were collected from the twenty-five agencies that issue financial grants ranging from 2009 to 2019. The FOIA logs provided both quantitative and qualitative data by describing the number of information acquisition occurrences, and what those occurrences consisted of. This work-based project is continuously collecting and rendering data from the various federal agencies, the disposition is as follows:

* data has been collected and rendered

** data has been collected but not rendered

*** agency has denied request, or the request is in negotiation

The United States Department of Commerce is not a grant issuing agency; however, the regulatory functions of this agency proved useful in exploring a higher educational institutions the development of competitive advantages.

Appendix 3

Qualitative Stories

Georgetown University is a large private Catholic university situated within the nation's capital that hosts a large diverse student population. Dr. David Konisky is an associate professor within the McCourt School of Public Policy and writes extensively on the matters of environmental health and justice. In 2009, Dr. Konisky, requested information from the Environmental Protection Agencies's National Environmental Justice Advisory Council specifically relating the council's "annual financial expenditures, full-time equivalents, and copies of the environmental justice strategy documents" (Environmental Protection Agency, 2013). Since Dr. Konisky's 2009 information request, he specifically published a book and two journal articles related to the subject of environmental justice (Konisky, 2019).

University of California is a large prominent state university that possesses the School of Ecology Management and Restoration within the University of California - Davis. The University of California - Davis extensively submitted FOIA requests to the Environmental Protection Agency between the years of 2009 through 2013 requesting information on numerous subjects such as pesticides, algal toxicology, and concentrated animal feeding operations (CAFO). Consequently, a review of the university's website indicates a comprehensive curriculum and extensive publishing of the environmental impacts of pesticides, toxicology, and CAFOs. One specific example is a request submitted to the Environmental Protection Agency bidding for information on “Class I injection wells locations, depth, and other characteristics of wells located in [the] Central valley of California, Sacramento, Davis, district 6 or close to this area” (Environmental Protection Agency, 2012). Consequently, the University of California – Davis published an extensive report on ground water within the Sacramento Valley the same year and extensively cited wells and their characteristics such as depth and location within the report (Boyl, et al., 2012).

An interesting story steeped in corporate espionage where the University of California - Irving Professor Turner Suda was convicted of providing university proprietary research information to Japanese corporations for return of payment. The university suspecting misconduct, opened an internal investigation in 2009 that eventually resulted in a criminal conviction in 2014 along with "paying more than $400,000 in restitution and costs to the university" (Dalton, 2014). A review of the University of California's FOIA activity disclosed a request made in 2009 to the National Science Foundation requesting the “travel expense statements and related supporting documentation (i.e., receipts for hotel, air, meal, etc.) for Dr. Suda from September 1, 2004 to April 15, 2009” (National Science Foundation, 2009).

West Hills Community College is a large public California based community college system situated within California’s agriculture region and is responsible for educating a large Spanish speaking migrant population (West Hills Community College District, 2015). West Hills Community College engaged in an extensive FOIA collection campaign between the years of 2014 through 2016 where five requests were submitted to the US Department of Education specifically requesting successful grant applications from the Chemeketa, Yuma, La Paz, Hartnell, Cabrillo, Gavilant, and Kern Community Colleges (US Department of Education, 2014; US Department of Education, 2015). The FOIA requests were highly detailed citing grant and Purchase Request (PR) reference numbers indicating that the West Hills Community College possessed detailed knowledge of exactly which higher educational institution successfully

solicited for, and won, the College Assistance Migrant Program grant from the US Department of Education. Consequently, West Hills Community College Submitted a grant request to the US Department of Education in February 2015 and subsequently won a $2.375M College Assistance Migrant Program grant in July 2015 (US Department of the Treasury, 2020).

Wellesley College is a small private women's liberal arts college located in Wellesley, Massachusetts. Professor, James Turner published extensively on numerous environmental subjects to include the proper disposal of batteries (Turner, 2020). During the year of 2014 Professor Turner submitted two FOIA requests to the US Government requesting information on lead pollution and the lead acid battery industry (US Center For Disease Control, 2014; Environmental Protection Agency, 2014). Subsequently, the following year Professor Turner published a paper in the journal of Industry Ecology titled Charging up Battery Recycling Policies. The paper outlined current Extend Producer Responsibility (ERP) policies associated with the disposal of batteries to include lead-acid batteries (Turner & Nugent, 2015).