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A Net Present Worth Analysis of Considered Academic Programs at a Private, Regional Higher Education Institution

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ABSTRACT

This paper examines the situation of a private, liberal arts college that sought to enhance its competitiveness by investigating the financial potential and viability of offering either a complete human resources degree program or a graduate certificate with an emphasis area in human resources as a method of bolstering its strategic position within its academic market. The net present worth (i.e., net present value) method was the analytical method of financial analysis. The net present worth outcomes indicated that the complete degree program was the preferred alternative.

Keywords: Net Present Value, Curriculum and Design, Capital Budgeting, Higher Education Finance

This financial analysis considers the case of an extended campus of a four-year, higher education institution in Tennessee. The institution exhibited both regional accreditation and program accreditation within its business school among all of its extended campuses. The college offered degree programs in education, business, and healthcare administration primarily for adult learners. Graduate degree programs were offered by this campus location, including Master of Business Administration, Master of Arts in Teaching, and Master of Education degrees. Doctoral programs were not offered at any campus of this institution.

Despite its array of offered academic programs, the institution experienced declining enrollments that spurred it to examine the potential of offering new academic programs whereby it could attract new students, improve its market share, and generate increased revenues.

The decision regarding academic programs had implications for influencing the competitive strategy of the institution. Regardless of the outcome of the decision, it was deemed that the enhancement of academic offerings would require much consideration of its cash flows over a strategic period. Therefore, the decision involved various forms of analyses ranging from break-even analysis and cost-benefit analysis to considerations of capital budgeting and benchmarking. As a subset of these analyses, this paper quantitatively investigates estimated cash flows involving the potential net present worth (NPW) values (i.e., net present values) for a proposed certificate program versus those of a proposed complete degree program. Based on the outcomes of this limited capital budgeting study, conclusions and recommendations are offered regarding the examined academic programs.

In order to bolster its market competitiveness and as a method of improving and increasing its annual revenues, the institution considered an expansion of its graduate programs to include a graduate certificate program in human resources management or the addition of a complete graduate degree in human resources management. The local competitive market consisted of higher education institutions of similar size, resources, and missions that also offered both undergraduate and graduate degree programs that were similar or equivalent to the existing program offerings of the college. Therefore, the college considered enhancing its competitiveness through differentiating its degree program offerings. None of the direct market competitors offered a graduate certificate or a complete graduate program with an emphasis in human resources. Hence, an opportunity existed for the remote campus to become a niche market leader within the scope of a competitive strategy based on differentiation. Therefore, the college examined the potential of a new program offering, via the NPW method, as a resource whereby it could achieve status as a market leader, enhance its market competitiveness, and generate improved revenues.

LITERATURE REVIEW

Financial management is a relevant consideration of any academic institution regardless of its status as either a private or public higher education entity. Numerous funding sources exist through which institutions of higher education obtain funding. Examples include tuition monies derived from students, grants, gifts, partnerships with industry, and so forth. In some cases, public funding is diverted toward private institutions of higher education. For instance, in Maryland, some amounts of public financial supportiveness of private institutions have existed for over 40 years (Scott, Williams, & Derrick, 2015). Essentially, certain partnerships exist between private institutions and the public sector, and the disbursement of monies occurs in conjunction with a specific array of requirements that govern the partnership (Levy, 2007).

Among many smaller private institutions, tuition dollars represent a dominant method of generating revenues. However, during the preceding 30 years, undergraduate tuition rates among four-year, private

institutions of higher education have increased by an average amount of approximately 3.5% greater than the inflation rate annually (Ehrenberg, 2012). Among four-year, public institutions, tuition rate increases, exceeding the inflation rate, represented approximately 5.1% annually (Ehrenberg, 2012). A variety of reasons exist for such increases, ranging from institutional competitiveness that drives academic entities to exhibit a "very best" status within their respective activities to the perceptions of students and parents regarding the prestige of the institution (Ehrenberg, 2012, p. 193).

Despite the existence of multiple financing methods and dramatic increases of tuition rates, funding is a limited resource among academic settings. Thus, any decision regarding the expending of monies involves considerations of how to allocate limited financial resources toward satisfying the unlimited needs and wants of the institution and its stakeholders. Such decisions must be contemplated neither haphazardly nor lightly; instead, they involve much examination and planning (Hunt, Oosting, Stevens, Loudon, & Migliore, 1997). Similarly, methods of obtaining funding must be planned and examined strategically (Alstete, 2014).

Given this notion, investment strategies encapsulate the criteria that are used formally to seek and evaluate possible opportunities for investment (Bierman & Smidt, 2007). Investment strategies are synonymous with the notions of capital budgeting strategies (Shekhar, 2010). Within the context of strategy, the concept of capital budgeting provides a means of assessing potential long-term investments that may be contemplated among higher education institutions.

Capital budgeting techniques are sound methods of evaluating strategically the financial aspects of possible investment alternatives. Doss, Guo, and Lee (2012) indicate that capital budgeting may be used to evaluate the financial worthiness of a potential investment alternative from multiple perspectives: 1) time, 2) rate, 3) present value, 4) future value, and 5) profitability. Respectively, the corresponding capital budgeting techniques, representing each of the views, consist of payback-time method, internal rate of return method, net present worth method, net future worth method, and profitability index method (Doss, Sumrall, McElreath, & Jones 2013). This study uses the net present worth (NPW) method as its basis of financial analysis.

Investigating the literature associated with capital budgeting presents the common aspects of rendering decisions based on economic and financial analysis through the uses of NPW techniques among a variety of business settings and domains. Connor (2006) indicates that such techniques generate returns that exceed the capital cost investments and generate cash flows that compensate for financial outlays and charges of interest, and provide net income values to organizations with respect to current valuation. Doss, Sumrall, and Jones (2012) examine capital budgeting methods from the perspective of the justice system, including the net present value method. Brigham and Ehrhardt (2014) discuss the importance of net present value analysis by considering its usefulness as a viable resource for rendering capital budgeting decisions through time. Within the context of an educational institution and its programs, Doss, Troxel, and Sumrall (2010) examine capital budgeting regarding rates of return for the degree offerings of a liberal arts college. Megginson and Smart (2006)

consider a positive net present value outcome to be associated with the competitive advantage of a firm. Lasher (2005) establishes the importance of the net present value technique with respect to rendering a decision among projects for the purposes of ranking and selection of projects.

Various perspectives of project management are influenced by the NPW technique. The NPW technique is applicable regarding the current present worth of cash flows that represent a difference between the present worth of benefits versus costs (Timmons, Weiss, Callister, Loucks, & Timmons, 2014). Graber and Rothwell (2006) consider net present value and option analysis with respect to the feasibility of nuclear plant projects. Whitman and Terry (2012) and Blank and Tarquin (2011) indicate that the NPW technique is appropriate for examining potential engineering investments.

Within the mining industry, the use of net present value and worth techniques is also applicable. Meybodi and Behnia (2013) examine NPW within the context of Australian coal mining. Nieto and Bascetin (2006) discuss the use of gradients to improve project net present value outcomes through mathematical optimization. As a result, project managers strengthen their ability to render decisions concerning the validity, ordering, selection, and implementation of mining projects.

Considerations of NPW are also manifested within the domain of real estate with respect to real property investment decisions. Witmer and Kelley (2005) consider a derivative of the common buy versus lease decision through an examination of renting real property versus selling real property. Such an analysis is beneficial for investors and businesses that must render decisions concerning long-term, strategic actions that affect their financial outcomes over significant periods of time.

Within the medical and the pharmaceutical industries, the use of NPW analysis techniques is also applicable. Skrepnek and Sarnowski (2007) indicate that the use of net present value is a common method through which decisions occur before approval is granted from the Federal Drug Administration regarding experimental biotechnologies. This notion is confirmed by Monnet (2005) through the observation that net present value analysis is a primary method of determining the priorities of pharmaceutical projects with respect to the development of new medicines.

The NPW technique is also appropriate within the context of energy resources. Sengar, Patil, & Chendake (2013) consider NPW within the context of briquetted fuels. Taberno, Del Valle, and Galan (2012) examine NPW with respect to biodiesel production. Gilani, Aris, and Bhaskoro (2014) consider NPW within the context of cooling costs among academic settings. Gibson (2015) contemplates NPW regarding Australian carbon pricing within the context of heat and power systems. Tan, Marker, and Roberts (2014) use NPW for examining the producing of diesel fuel and gasoline from various biomasses. Gallagher (2011) uses the NPW approach to examine the production of biodiesel fuel from sources of algae.

The preceding examples show a variety of NPW implementations across several different domains. Given the portability and adaptability of the mathematical foundations of capital budgeting and the NPW technique, its application areas are diverse. This compilation of literature demonstrates an array of domains in which NPW analysis

is applicable. Based on the preceding literature, the transferability of the NPW method is demonstrated through a variety of perspectives. Therefore, materials are presented that substantiate the method as a viable tool of financial analysis that supports the rendering of a decision with respect to the acceptance or rejection of potential projects and courses of action.

PRESENT WORTH AND COST-BENEFIT METHODS IN THE EDUCATION DOMAIN

The NPW method is applicable within the context of higher education decisions. Institutions should consider as viable investments any projects that yield the "largest net present value" when compared against competing alternatives (Townsley, 2014, p. 5). Given this observation, the NPW technique is a tool through which higher education investment projects may be examined from the context of either accepting or rejecting the strategic implementation of potential degree program offerings within an academic environment.

The NPW method is an appropriate analytical method within the context of higher education. From the perspective of NPW, Doss, Vinson, Fields, Sumrall, and Jones (2009) examined the capital budgeting potential of degree program expansion at a private institution of higher education. In this case, the alternative showing the highest NPW value was recommended as the course of action for the institution (Doss, et al., 2009). Within the contexts of medical education and programs, Langston, et. al., (2013) applied the NPW method, in conjunction with economic analysis, to examine the impacts of specialty during school years with respect career earnings. The use of NPW techniques is also implemented within the domain of nursing education. Harlow and Sportsman (2007) consider the use of such analytical tools through an investigation of rendering decisions involving the selection of patient simulators as nursing training devices.

Within the context of education, present worth may also be considered from the perspective of human capital (Poteliene & Tamasauskiene, 2013). In this sense, education is viewed as an investment decision in which individuals must carefully compare and contrast educational choices from an economic perspective (Poteliene & Tamasauskiene, 2013). Such an investment is hoped to improve the abilities of someone to perform within labor market and to improve the chance of an individual earning higher wages at some future point (Poteliene & Tamasauskiene, 2013). Given these notions, NPW represents a method of estimating the differences between the present worth of a future income that is attributed to educational attainment versus the cost of education (Poteliene & Tamasauskiene, 2013).

These notions highlight a decisional dichotomy within the context of education: 1) decisions rendered by academic institutions via NPW techniques and 2) decisions rendered by individuals with respect NPW valuation. Although the NPW method is a capital budgeting technique that provides insight regarding a recommended course of action for both academic institutions and individuals, other methods of examining academic investments exist among educational domains. For instance, cost-benefit analysis is a method of examining the identified costs versus potential benefits of an investment to determine whether the investment may be accepted or rejected.

Cost-benefit analysis is applicable within the context of higher education. It may be used to investigate productivity indexes, costs versus benefits socially, and time aspects of potential educational investment opportunities (Dunn & Sullins, 1982). Cost-benefit analysis may be used to facilitate educational planning initiatives (Paul, 1972). Capital budgeting and cost-benefit analysis are not competing techniques. Instead, they may be considered as complementary methods when evaluating investment opportunities (Doss, Sumrall, & Jones, 2012). Spanning a period of over 40 years, several examples of cost-benefit analysis exist within various subsets of the educational literature that demonstrate these concepts.

During the early 1970s, Paul (1972) examined the initial penetration of management education among Indian educational markets via cost-benefit analysis. Using a rate of 13%, Paul (1972, p. 346) indicates that "management education" was justified among Indian markets, even under the "most pessimistic assumptions" regarding cost and return. During this period, social return rates for Indian collegiate education was approximately 16% (Paul, 1972). During the middle of the 1970s, Parker (1975) advocated the use of cost-benefit analysis to evaluate potential investments among nontraditional educational opportunities. Schaffer & Mory (1977) examined the cost-benefit potential of improving the documenting of instructional development services. Kastner (1977) used cost-benefit analysis to explore community college education within the contexts of economic investments. Kastner (1977) showed that taxpayers received return rates of approximately 12.11% (males) and approximately 11.34% (females) regarding community college investments. Kaster (1977) also showed accrued rates of approximately 5.6% (males) and approximately 5.88% (females). From the perspective of cost-effectiveness, Olutola (1979) addressed issues of educational costs and benefits within a school-district context.

Various studies exist within educational literature of the 1980s that show the use of cost-benefit analysis. Rizzuto (1982) explores cost-benefit analysis with respect to mandatory requirements for continuing education in nursing occupations. Navaratnam and Hillison (1985) used cost-benefit analysis to show positive outcomes economically for three out of four examined vocational education programs. Engleman and Forbes (1986) consider economic cost-benefit and cost-effectiveness within the context of health education. Navaratnam and Hillison (1987) acknowledged a growing need to justify vocational education economically, and established that cost-benefit analysis was a relevant method for identifying costs versus benefits among local, secondary vocational programs.

The 1990s witnessed further use of cost-benefit analysis among educational domains. Wanjin and Jianmin (1991) explored Chinese natural language education via cost-benefit analysis and market valuation. The outcome of the study showed that the economic strengths of languages are measurable by characteristics of popularity and usage frequency among the users of the language (Wanjin & Jianmin, 1991). During this period, NPW approaches were used to supplement cost-benefit endeavors. For instance, within an educational feasibility study in Mauritius, the NPW and rate of return capital budgeting methods were used as complements for supporting a cost-benefit analysis of MBA and other graduate programs (Belli, Khan, & Psacharopoulos, 1999).

The new century ushered additional considerations of cost-benefit analysis within the context of education. Hummel-Rossi and Ashdown (2002) examine and define both cost-benefit analysis and cost effectiveness analysis within the educational domain. Hummel-Rossi and Ashdown (2002) indicate that cost-benefit analysis involves measuring input and output attributes in the terms of monetary unit whereas cost-effectiveness analysis involves comparing alternative exhibiting input and output characteristics that are not constrained solely to monetary units. During this period, capital budgeting, via the NPW method, served as a complement to cost-benefit and cost-effectiveness analyses. For instance, within a cost-benefit analysis of Japanese college education, it was shown that collegiate quality improves greatly the return rate of college education (Ono, 2007).

The mathematics of cost-benefit analysis, cost-effectiveness, and capital budgeting transcend time and disciplines. Although each higher education institution is unique and experiences decisions that require some type of economic and financial analysis, the mathematical principles underlying the NPW and cost-benefit concepts are appropriate for examining a variety of educational investments. In the case of the host institution, NPW analysis is applied to consider its potential academic degree offerings.

ECONOMIC AND COMPETITIVE CONSIDERATIONS

Markets exist for higher education both domestically and internationally. Academically, competitive markets for higher education represent amalgamations of institutions (i.e., educational providers); their respective awards, degrees, and credentials (i.e., products); and students (i.e., customers) (Meyer, 2004). Perspectives of competition may be considered from competition between institutions as enterprises or from competition among degree programs (Meyer, 2004). Competition may be considered from the perspective of choices that are made by market consumers (i.e., students) when deciding upon an institution of higher education to service their educational needs (Davies & Hammack, 2005). Thus, academic institutions must compete against peer institutions for scarce students, academic programs may compete against other programs, and students may view a range of institutions and programs when deciding which alternative best suits their needs and wants.

Various economic and competitive factors impact the decisions of higher education institutions regarding the offering of academic programs. A foundational tenet of economics involves the conundrum of how best to allocate scare, limited resources to satisfy the unlimited needs and wants of humans through time (Doss, Sumrall, McElreath, & Jones, 2013). Because resources are limited, educational institutions often compete for public monies that could be allocated for other uses, such as funding prisons and law enforcement organizations (McElreath, et al., 2015). Within the context of educational institutions, Agrawal, Fox, and Slemrod (2015) indicate that competition exists because parents often decide among multiple educational providers when contemplating alternative choices regarding the selecting of a specific academic institution. In such instances, academic institutions may alter "spending policies" toward improving "educational services (Agrawal, Fox, & Slemrod, 2015, p. 703)." Economic competition may be exhibited

intensely among locations in which a variety of institutional choices exist (Agrawal, Fox, & Slemrod, 2015). Because of the need among educational institutions to attract and retain students while servicing their respective stakeholders, diversification exists academically whereby competition is fueled and decisions are influenced (Teixeira, Rocha, Biscaia, & Cardoso, 2013). Competition is perceived as a contributor toward improving the overall quality of academic offerings among educational institutions (Teixeira, Rocha, Biscaia, & Cardoso, 2013).

Within the context of competition, tuition pricing also may be leveraged as an enticing factor when attracting students and influencing attendance decisions (Canche & Sacramento, 2014). With respect to tuition pricing, individuals may contemplate the undertaking of an educational experience if the cost of education is compensated satisfactorily by the potential of higher earnings at some future period (Blundell, Dearden, Meghir, & Sianesi, 1999). Thus, educational institutions must question whether their pricing is competitive to lure and retain students.

Given the advent and proliferation of the Internet and the influences of globalizations, modern academic institutions must acknowledge the realities of global competitiveness. In order to remain competitive, many U.S. institutions of higher education serve foreign markets (Wang, 2013). The exporting of academic programs to serve foreign markets, especially in business disciplines, has grown quickly over the preceding decade (Wang, 2013). Conversely, in order to attract foreign students to attend U.S. institutions, various academic programs and institutional agreements may be pursued uniquely to entice international students to visit American society and to improve student enrollments among higher education institutions (Allen, et al., 2015).

The characteristics of competition differ domestically and internationally. This notion may be considered from perspectives of competition regarding American and Canadian students. Over time, U.S. institutions of higher education have increasingly become more selective regarding admissions criteria, and top-category students have increasingly gravitated toward higher education institutions with strong reputations (Davies & Hammack, 2005). Within Canada, approximately 60% of students pursue some form of higher education after graduating high school (Davies & Hammack, 2005). Although both sets of students pursue higher education, American students perceive institutional reputations and elite statuses as an attractors and catalysts when selecting higher education institutions whereas Canadian students deem the choice of collegiate major and program to be more important (Davies & Hammack, 2005). In other words, two different perspectives of competition exist: Americans make attendance choices based on institutional reputations and prestige whereas Canadians make attendance choices based on programs and major.

Student composition and academic program attractiveness are salient aspects of whether an institution exhibits survivability and viability through time (Lyken-Segosebe & Shepherd, 2013). Tuition dollars gleaned from students is an essential aspect of institutional viability (Lyken-Segosebe & Shepherd, 2013). Additionally, among educational institutions, determinants of viability and organizational successfulness through time involve considerations of part-time versus full-time enrollments and the

range of degrees offered by the institution (Lyken-Segosebe & Shepherd, 2013).

Educational competitiveness and program attractiveness are important for obvious reasons: sustainability and solvency. Academic entities that exhibit uncompetitive, undesirable programs and academic offerings and that do not satisfy market needs may be unable to attract and maintain sufficient levels of students and cash flows to sustain their viability thereby resulting in closure or dissolution in due time. Academic entities that are incapable of attracting and retaining sufficient quantities of students and maintaining satisfactory cash flows may experience insolvency financially. As a result, the eliminating of programs or the closing of the institution may occur (depending upon the situation).

COST EFFECTIVENESS AND EDUCATION

Academic settings must contemplate whether education provides value that is relative to its costs (Walsh, Levin, Jaye, & Gazzard, 2013). Pondering associated questions necessitates a consideration of cost effectiveness analysis. Basically, through cost effectiveness analysis, academic institutions evaluate multiple interventions or approaches to education based on their respective "costs and effects" toward generating a specific result (Walsh, Levin, Jaye, & Gazzard, 2013, p. 962). Generally, cost effectiveness analysis is characterized by five primary components: 1) interventional design components, 2) measurable costs and outcomes, 3) comparison of multiple conditions, 4) relationship of costs and outcomes with respect to a solitary ratio of interest for each examined model, and 5) other considerations unrelated to the analysis that may be controllable or held static (Bakia, Shear, Toyama, & Lasseter, 2012). Within the education sector, cost effectiveness analysis is a viable method of performing economic and financial analysis for virtual learning experiences.

Academic institutions can neither discount nor ignore the seriousness of cost effectiveness. Efficient and cost-effective operations are essential to the survival of any higher education institution (O'Neil, Singh, & O'Donoghue, 2004). Therefore, academic institutions must consider cost-effectiveness and perform various cost analyses when crafting strategies that affect their long-term operations and endeavors. Similarly, academic institutions must consider cost effectiveness among their short-term operations. Given these notions, academic institutions exhibit an unceasing necessity of exhibiting cost-effective practices and endeavors. Thus, any institution of higher education may continuously identify and pursue methods of improving organizationally toward the betterment of cost effectiveness.

Educationally, methods of improving cost effectiveness encompass endeavors of cost reductions, improvements of learning effectiveness, and volume increases (Curtain, 2002). Cost effectiveness is also exhibited via student retention among educational settings because reducing attrition rates is less expensive than the recruiting of new students (Chyung, 2001). Online courses are cost effective resources through which demand for educational services may be satisfied (Mupinga, 2007). Factors of cost effectiveness among educational settings range widely from instructor costs to equipment (Bartley & Golek, 2004). Cost categories include materials and equipment, personnel, facility, necessary client feedback, and any other

pertinent inputs (Zendejas, Wang, Brydges, Hamstra, & Cook, 2013). From the perspective of course delivery, recording and streaming instructional video is cost effective (Smith-Stoner & Willer, 2003). Additionally, the training of faculty is more cost-effective when performed online than when performed face-to-face (Jung, 2005).

Harris (2013) indicates that cost-effectiveness analysis is applied with greater emphasis among public policy areas than is found among specific educational programs and policies. As a result, individuals responsible for rendering decisions often experience insufficient information regarding the cost effectiveness of policies, programs, and resources (Harris, 2013). Although such deficiencies exist, the use of NPW provides a means through which decisions may be strengthened. For instance, Harlow and Sportsman (2007) implement NPW as an analytical method for examining the cost-effectiveness of patient simulators within the context of nursing education.

Although the host institution must be concerned with cost effectiveness within its operational settings, the NPW analysis herein provides insight regarding which possible academic program alternative represents a recommended course of action. Various cost attributes delineated within the literature were incorporated within the study. For instance, when assessing historical cost data to delineate cash flow expectations within this NPW study, several cost factors were pertinent – instructor costs, equipment costs, lease costs, and so forth. Inclusion of these factors was commensurate with the discussions of Bartley and Golek (2004) regarding cost attributes of analysis, design and development, implementation, and evaluation. Inclusion of these attributes was also commensurate with the discussions of Zendejas, et al. (2013) regarding the costs of facilities, personnel, equipment, and so forth.

CAPITAL BUDGETING QUESTIONS

The college assessed and evaluated the possibility of increasing its competitiveness and revenues by adding either a graduate certificate or a complete degree program in human resources among its academic offerings. Given data sets that estimated the expected cash flows for both academic endeavors, the institution desired to identify which program would provide an acceptable NPW value. Therefore, the institution investigated three primary questions:

1) What was the possible NPW value associated with the certificate?
2) What was the possible NPW value associated with the complete degree program?
3) Which of the examined academic programs was recommended as a viable contender based on a comparison of the calculated NPW values?

SCOPE, CONSTRAINTS, AND ASSUMPTIONS

This study compares the two potential investment alternatives via a consideration of NPW, and not through a consideration of any other form of capital budgeting analysis. Therefore, a limitation of this investigation is exhibited because only a solitary analytical method was used for examining the potential of each program investment with respect to judging whether it was deemed as either acceptable or unacceptable. Therefore, other methods of analysis, such

as options analysis, cost-benefit analysis, or payback period, may generate different outcomes that may either refute or corroborate the analytical outcomes of this study.

The cash flow estimates throughout the strategic period only considered the potential revenues that were expected from both programs. Because the institution desired to only view the potentials of incoming revenue, the respective costs of offering the programs were not contained within the projected cash flows over the strategic period. However, such costs were incorporated as initial investment costs that were required for commencing the program, and are reflected within year zero. Overall, a solitary view of incoming cash flows was considered within the NPW analysis throughout years one through seven.

The scope of this study was affected by the motivations of the college as a private, non-profit, Christian higher education institution. Basically, the motivation of shareholder wealth maximization was an immaterial consideration given the non-profit and religious statuses of the college. Therefore, aspects of market-value added considerations that are typically associated with rendering decisions from the perspective of a for-profit organization are diminished within this study. Instead, considerations of economic value added (EVA) tenets, generating of public good, and the fulfilling of organizational mission were considerable influences within this analysis. Although positive NPW outcomes were exhibited, the institution must incorporate EVA considerations and aspects of organizational mission within its final decision regarding the proposed academic programs. However, given the basic expressions of analytical enquiry considered herein, it is beyond the scope of this study to examine facets of EVA, public good, and organizational mission within the decision domain.

The principle of mutual exclusion exists within the NPW analysis domain. The college judged that its resources were available and sufficient only to pursue a solitary academic offering. Therefore, one and only one academic program would be considered as a strategic resource for improving competitiveness and strengthening cash flows during the considered period. The strategic period encompassed seven years.

Certain assumptions permeated the financial analysis. It was assumed that students would complete the graduate certificate within one academic year via enrolling in a total of nine semester hours per semester. Thus, the graduate certificate was accomplishable within the period of two semesters. It was assumed that students would complete the full degree within two academic years via enrolling in a minimum of nine semester hours per semester. Regardless of the program, it was assumed that students would maintain continuous enrollment until graduation.

At the time of this study, the college experienced an assessment period regarding its academic programs. The data sets used within this study were arrays of estimated future cash flow values that were subject to revision. Therefore, the NPW outcomes of this study may not be representative of later outcomes that may be calculated by using revised data values, a decreased time period, or an increased time period. Therefore, the NPW findings herein may be incommensurate with those of any future explorations that could include additional data types and categories, different variables of interest, or different cash flow expectations.

CAPITAL BUDGETING METHODOLOGY

The methodology consisted of obtaining the anticipated financial data estimates from the college. These cash flow estimated represented the financial cash flow expectations regarding the proposed academic endeavors. The NPW method, as described by Denn (2012) and Rogers and Duffy (2012) served as the mathematical and analytical methodology for performing the NPW financial analysis. The NPW outcomes of both academic endeavors were ranked and ordered with respect to the NPW outcomes. Upon examining the NPW outcomes for both endeavors, the alternative demonstrating the highest NPW outcome was recommended as a viable alternative for consideration. All mathematical calculations were performed using spreadsheet software.

Using the NPW approach was beneficial and advantageous because it incorporated the basic notion of time value regarding money to examine an investment situation (Needles, Powers, & Crosson, 2011). Selection rules that governed the NPW methodology are stated as follows:

- If the NPW outcome value exceeds the value of 0.0 (i.e., a positive value exists greater than the value of 0.0), then the investment initiative may be deemed as acceptable because the NPW outcome value is positive and exceeds any established "hurdle rate (Needles, Powers, & Crosson, 2011, p. 1238)."
- If the NPW outcome value is less than the value of 0.0 (i.e., a negative value exists less than the value of 0.0), then the investment initiative may be deemed as unacceptable because the NPW outcome value is negative and does not surpass any established "hurdle rate (Needles, Powers, & Crosson, 2011, p. 1238)."
- If the NPW outcome value equals the value of 0.0 (i.e., neither a positive nor negative value exists), then the investment initiative may be deemed as acceptable because it satisfies the minimum established return rate, and may be deemed as acceptable (Needles, Powers, & Crosson, 2011). Also, this condition may also be considered as one of indifference regarding the investment opportunity (Arai, 1998).

In the event that multiple investment alternatives are compared with respect to the condition of mutual exclusion, then the NPW outcome that exhibits the highest value is recommended as the preferred, solitary investment alternative (Brigham & Ehrhardt, 2014).

Regardless of the period examined, sensitivity is also a consideration of economic and financial analysis. The use of any form of economic and financial analysis technique is situational, and is sensitive to a variety of factors. Sensitivity analysis represents a means of determining how

changes in variables corresponding to certain assumptions affect assessments and evaluations (Farvacque-Vitkovic & Kopanyi, 2014). Time is also a variable that may be examined from the perspective of sensitivity analysis (Malony, 2011). From a rate perspective, sensitivity may also be exhibited with respect to inflation within a market (Stoneberg, 2015). Khan (2014) indicates that present worth and rate of return may be used as variables of interest within sensitivity analysis. Within the context of education, sensitivity may be exhibited with respect to changes in variables of enrollment rates, expected income differentials, and the employability of program graduates (Belli, Khan, & Psacharopoulos, 1999).

Using time as its basis, the host institution examined multiple periods of sensitivity encompassing five years, seven years, and 10 years using a static hurdle rate. Based on historical observations of institutional programs and cash flows, considerations of expected program costs, dynamics of enrollments, and expectations of desired profitability, an 11% rate was determined by institutional administration to be the minimally acceptable hurdle rate for this analysis. When compared to references within the preceding academic literature (Kastner, 1977; Paul, 1972), the 11% rate is similar to rates described among previous studies.

Given the considerations of program growth through time, the period of seven years was deemed the most realistic perspective. During the initial periods, it was assumed that marketing, advertising, and forging additional corporate relationships would require time before their efficacies were manifested among enrollment numbers. As such, a five-year period was deemed as minimally acceptable whereas a seven-year period was viewed as more practical by institutional administration. Although calculations were performed for the period of 10 years, such a lengthy period is highly speculative, and was eventually deemed as unrealistic for the immediate considerations of the host institution. Thus, the discussions herein describe NPW considerations for a seven-year period.

Measurement data were obtained from observations of institutional historical data regarding enrollments (with corporate agreements included in the enrollment data), tuition values and corresponding tuition rate increases, attrition rates, retention rates, and graduation rates. A review of historical accounting data (e.g., faculty costs, building lease costs; insurance costs; advertising costs; materials costs; and so forth) and enrollment projections of corporate partners were used to delineate cash flow expectations and to specify attributes of year zero investment within this study.

Variables corresponding to the examined graduate certificate represented of base rate of tuition, annual tuition increase percentage, annual student enrollment increase percentage rate, attrition rate percentage, and an estimated rate for NPW calculations over the first through the seventh years. The estimated tuition increase percentage was 3.0% yearly, the estimated rate of student attrition was 50.00%, the estimated student enrollment increase percentage was 15.00% yearly, and the estimated rate for NPW calculations was 11.00%. The graduate certificate contained 18 semester hours. One semester hour of credit was estimated to be $550.00. Therefore, the tuition rate for the certificate was $9,900.00. Because of educational service agreements and contracts with local organizations, an estimated student

enrollment was estimated to be a total of 60 students for the first operational year.

Variables corresponding to the examined graduate degree represented of base rate of tuition, annual tuition increase percentage, annual student enrollment increase percentage rate, attrition rate percentage, and an estimated rate for NPW calculations over the first through the seventh years. The estimated tuition increase percentage was 3% annually; the estimated student enrollment increase percentage was 15.00% annually, the estimated rate of student attrition was 55.00%; and the estimated rate for NPW calculations was 11.00%. The graduate degree program contained 39 semester hours. One semester hour of credit was estimated to have a financial cost of $550.00. Therefore, the estimated tuition rate for the degree program was $21,450.00. A total of 35 students were estimated for enrollment during the first operational year.

DISCUSSION OF THE NPW ANALYSIS

Commencing either academic program necessitated initial costs of investment that were incorporated within year zero of the analysis. Examples of the initial investment costs included considerations of accreditation; insurance; technology; administration; marketing, sales, and advertising; personnel; legal fees; student recruiting; facilities leasing, maintenance, and security; classroom supplies; and identifiable contingencies. Expenses regarding the costs of year zero were $821,672.37 for the complete graduate degree program and $752,172.37 for the graduate certificate. No student enrollments were anticipated during year zero because it represented the preparatory, formative period necessary for initializing the programs. During year zero of both programs, student enrollments were inapplicable. In other words, only initial investment expenses were applicable during year zero.

Regarding the proposed graduate degree program, the first year of student enrollment was estimated to be a total of 35 students. Anticipated student enrollments for the remaining period, during the first through seventh years, were calculated with respect to the anticipated rate of growth of the program per year. The values of attrition were generated by multiplying the expected quantity of students by the appropriate rate of attrition. The value of the annual enrollment was calculated by subtracting the calculated value of attrition from the anticipated quantity of students enrolled during each year. The values of base tuition were calculated with respect to the specified tuition rate increase annually. The values of tuition cash flows were generated by multiplying the appropriate yearly enrollment values by the appropriate tuition cost of the academic program for each annual period. Per the discretion of the college, value rounding was unincorporated within the mathematical calculations. Table 1 shows the estimated data values for the degree program.

Table 1 - Value Estimates for the Proposed Degree Program

Period	Enrollees	Attrition	Annual Enrollment	Base Tuition per Credit Hour	Cash Flows
0	0.00	0.00	0.00	$0.00	($821,672.37)
1	35.00	19.25	15.75	$550.00	$337,837.50
2	40.25	22.14	18.11	$566.50	$400,168.52
3	46.29	25.46	20.83	$583.50	$473,999.61
4	53.23	29.28	23.95	$601.00	$561,452.54
5	61.22	33.67	27.55	$619.03	$665,040.53
6	70.40	38.72	31.68	$637.60	$787,740.51
7	80.96	44.53	36.43	$656.73	$933,078.63

Regarding the proposed graduate certificate program, the estimated student enrollment was determined to be 60 students during the first year of operation. Expected student enrollment values for the remaining periods, during the first through the seventh years, were calculated with respect to the expected growth rate of the program per year. The values of attrition were derived by multiplying the anticipated quantity of students by the appropriate rate of attrition. The values of for the annual enrollment were calculated by subtracting the calculated value of attrition from the anticipated quantity of students enrolling during each year. The values of base tuition were calculated with respect to the specified tuition rate increase annually. The values for tuition cash flows were generated by multiplying the appropriate yearly enrollment values by the appropriate tuition cost of the academic program for each yearly period. Per the discretion of the institution, value rounding was unused within the mathematical calculations. Table 2 shows the estimated data values for the graduate certificate.

Table 2 – Value Estimates for the Proposed Graduate Certificate

Period	Enrollees	Attrition	Annual Enrollment	Base Tuition per Credit Hour	Cash Flows
0	0.00	0.00	0.00	$0.00	($752,172.37)
1	60.00	30.00	30.00	$550.00	$297,000.00
2	69.00	34.50	34.50	$566.50	$351,796.50
3	79.35	39.68	39.68	$583.50	$416,702.95
4	91.25	45.63	45.63	$601.00	$493,584.65
5	104.94	52.47	52.47	$619.03	$584,651.02
6	120.00	60.00	60.00	$637.60	$688,608.80
7	180.00	90.00	90.00	$656.73	$1,063,900.60

Using spreadsheet software, the NPW analysis calculations were applied against the cash flows of both the graduate certificate and the complete degree program.

The calculated NPW value of the proposed graduate certificate program was $1,658,307.21. The calculated NPW value of the full degree program was $1,789,154.70. Based on these final outcomes of the NPW calculations, in accordance with the selection rules discussed within the methodology section, the preferred investment alternative was deemed to be the complete degree program because it showed the highest NPW outcome value. Therefore, under the condition of mutual exclusion permeating the analysis domain, the complete degree program represented the recommended alternative.

IMPLICATIONS OF THE NPW OUTCOMES

During the years preceding this analysis, the college experienced fewer enrollments within both its graduate and undergraduate programs because of changing market preferences and new market entrants within its academic market. Therefore, it viewed any new, unique academic program as a resource whereby it could improve its market attractiveness to potential students and enhance its market competitiveness. This approach is commensurate with the strategic management observations of Hitt, Ireland, and Hoskisson (2015) because strategic endeavors contribute toward organizational long-term competitiveness and longevity, and because strategic pursuits include facets of product and service differentiation. The implications of possibly offering either a graduate certificate program or a complete graduate program involve considerations of strategic endeavors because they affect the long-term functions, activities, endeavors, and courses of actions that may be undertaken by the college.

The strategy may be considered with respect to its potentials of successfulness and unsuccessfulness. If its investment in a new academic program is successful, the offering of the human resources academic program represents a basis of strategic differentiation through which the college gains the opportunities to better serve its market consumers and to establish itself as a market leader. Therefore, the college gains the opportunity of improving its cash flows during the examined strategic period thereby satisfying its goal of increasing revenues. However, if unsuccessful, the college may experience further declines in enrollment and cash flows. Also, given any cost increases of expenses (e.g., personnel, accreditation, advertising, and so forth) that are associated with altering the academic program offerings, the campus could experience financial jeopardy. In a worst-case scenario, given its diminishing enrollments and financial returns, the college acknowledged the possibility of closing the extended campus should the differentiation strategy be unsuccessful.

Within its academic market, several competitors offered both undergraduate and graduate programs that rivaled the offered academic programs of the college and whose pricing schemes were competitive. Therefore, the addition of the proposed graduate certificate or the full graduate program, with a concentration in human resources, provides the college with an opportunity to incorporate service and product differentiation within its competitive strategy. Because none of the competitors offered the human resources concentration within their respective programs, this opportunity also provided the means whereby the college could establish and maintain itself as a leader within a niche market. These observations are commensurate with the basic characteristics

of strategic competitiveness as described by Hitt, Ireland, and Hoskisson (2015).

The NPW analysis showed that the complete degree program was the preferred and recommended course of action as an academic program investment. The decision was not considered lightly because of its strategic characteristics, implications, and potential consequences. Investing financial resources toward an academic program required a significant commitment from the institution and its stakeholders because the extended campus represented a small subset of the overall college. Cash flows and funding for the extended campus were derived primarily from student tuition revenues. Therefore, the campus must wisely and judiciously allocate funding for any project contributing toward the satisfying of its mission while simultaneously fulfilling its needs, bolstering its market competitiveness, and generating greater revenues through time.

CONCLUSIONS AND RECOMMENDATIONS

Any academic programs offered by the college must exhibit strategic benefits for its stakeholders, local community, and the organization. Altering the array of offered academic programs was considered as a method of strengthening overall strategic competitiveness of the college and improving its revenues. By doing so, the college gains the opportunity to service a greater share of the competitive market. In other words, the addition of a human resources academic credential provides a unique opportunity for servicing the needs of regional and local corporations, government entities, and individuals who express the need for enhanced human resources training and personnel credentials. As a result, the college gains an opportunity to increase strategically its prominence and visibility, and improve its reputation within the academic competitive market. Further, the addition of a human resources academic program provides market consumers with a greater range of alternative and substitute academic services from which they may partake within the community.

Both outcomes of the NPW calculations demonstrated positive outcomes thereby qualifying both as possibly acceptable pursuits. However, this analysis was constrained by a condition of mutual exclusion given its limited resources. The calculated NPW value of the proposed graduate certificate program was $1,658,307.21 whereas the calculated NPW value of the full degree program was $1,789,154.70. The alternative representing the highest NPW outcome is the preferable selection regarding the two compared academic program alternatives. Therefore, with respect to the calculated NPW outcome values, the preferred alternative was the complete degree program because it exhibited the greatest NPW value. Given this observation, it is recommended that the college contemplate the complete degree program as the contending endeavor to enhance strategically its academic offerings and competitiveness.

Some recommendations for additional examinations of the academic program offerings must be considered with respect to the scope, limitations, and constraints of this analysis. Only initial, estimated data sets, subject to revisions over time, were used within this study. Therefore, no guarantee exists that future considerations will involve a static consideration of the same data variables, quantity of variables, and values of variables. For instance, tuition rates, enrollments, and operations costs may change through time. Regardless, it is

recommended that the college further examine the respective potentials of both academic programs using a variety of conjectured, forecasted variables and values that may affect the decision domain.

Another recommendation is to examine the potentials of the respective programs financially through the use of a full range of capital budgeting techniques. This study only viewed the problem domain from the NPW perspective. However, several other capital budgeting methods exist through which the administrators and leaders of the institution may gain a stronger, more robust understanding of their dilemma. Therefore, it is recommended that the situation be examined from the capital budgeting perspectives of time, rate, and profitability. Among future studies, the recommended capital budgeting techniques include considerations of payback period, internal rate of return, profitability analysis, net future worth, and profitability index.

Besides a capital budgeting approach, other forms of analyses are also recommended for the college. Cost-benefit analysis represents a method of examining the dilemma from the perspectives of potential benefits versus costs. Break-even analysis provides some understanding of a period when profitability may occur in due time. It is recommended that both forms of analysis be used among future studies to investigate this situation. By doing so, the administrators and leaders of the college gain economic and financial insights that supplement the information that is gleaned from capital budgeting.

Regardless, in any case, the analysis herein represents a starting point from which future analyses may be pursued with respect to the considered academic programs. Given that the longevity of the institution is dependent upon its ability to identify, assess, and satisfy market needs and wants, any future analyses must be mindful of the survival of the institution strategically. Given this notion, the college must unceasingly evaluate its market position, market forces and competitors, academic programs, resources, and strategic endeavors with respect to its long-term perspectives of vision and sustainability.

REFERENCES

Agrawal, D.R., Fox, W.F., & Slemrod, J. (2015). Competition and subnational governments: Tax competition, competition in urban areas, and education competition. *National Tax Journal, 68*(3S), 701-734.

Allen, A., Doss, D., Henley, R., McElreath, D., Hong, Q., & Miller, L. (2015, May). *An analysis of domestic vs. international opinions among business students*. Paper presented to the annual meeting of the Joint International Conferences 2015 Academic Business World International Conference & International Conference on Learning & Administration in Higher Education, Nashville, TN.

Alstete, J.W. (2014). *Revenue generation strategies: Leveraging higher education resources for increased income*. Hoboken, NJ: Wiley Publishing.

Arai, K. (1998). *The economics of education: An analysis of college-going behavior*. New York, NY: Springer Publishing.

Bakia, M., Shear, L., Toyama, Y., & Lasseter, A. (2012). *Understanding the implications of online learning for educational productivity*. Washington, DC: U.S. Department of Education.

Bartley, S.J. & Golek, J.H. (2004). Evaluating the cost effectiveness of online and face-to-face instruction. *Educational Technology & Society, 7*(4), 167-175.

Belli, P., Khan, Q., & Psacharopoulos, G. (1999). Assessing a higher education project: A Mauritius feasibility study. *Applied Economics, 31*(1), 27-35.

Bierman, H & Smidt, S. (2007). *Advanced capital budgeting: Refinements in the economic analysis of investment projects*. New York, NY: Routledge Publishing.

Blank, L.T. & Tarquin, A.J. (2011). *Engineering Economy*. (7th ed.). New York, NY: McGraw-Hill Publishing.

Blundell, R., Dearden, L., Meghir, C., & Sianesi, B. (1999). Human capital investment: The returns from education and training to the individual, the firm, and the economy. *Fiscal Studies, 20*(1), 1-23.

Brigham, E., & Ehrhardt, M. (2014). *Financial Management: Theory and Practice*. (14th ed.). Thomson-Southwestern Publishing: Mason, OH.

Canche, G. & Sacramento, M. (2014). Localized competition in the non-resident student market. *Economics of Education Review, 43*, 21-35.

Chyung, S.Y. (2001). Systematic and systemic approaches to reducing attrition rates in online higher education. *American Journal of Distance Education, 15*(3), 36-49.

Connor, T. (2006). Net present value: Blame the workman, not the tool. *Strategic Change*, *15*(4), 197-204.

Curtain, R. (2002). *Online delivery in the vocational education and training sector: Improving cost effectiveness and case studies*. Retrieved from: http://eric.ed.gov/?id=ED465082

Davies, S & Hammack, F.M. (2005). The channeling of student competition in higher education: Comparing Canada and the U.S. *The Journal of Higher Education, 76*(1), 89-106.

Denn, M. (2012). *Chemical engineering: An introduction*. New York, NY: Cambridge University Press.

Doss, D.A., Guo, C., & Lee, J.Y. (2012). *The business of criminal justice: A guide for theory and practice*. Boca Raton, FL: CRC Press.

Doss, D.A., Sumrall, W., & Jones, D. (2012). *Strategic finance for criminal justice organizations*. Boca Raton, FL: CRC Press.

Doss, D.A., Sumrall, W., McElreath, D., & Jones, D. (2013). *Economic and financial analysis for criminal justice organizations*. Boca Raton, FL: CRC Press.

Doss, D.A., Troxel, S., & Sumrall, B. (2010). Using the internal rate of return method to consider the potential degree offerings of a liberal arts college. *American Journal of Business Education, 3*(5), 31-38.

Doss, D., Vinson, T., Fields, C., Sumrall, W., & Jones, D. (2009, November). *Using the net present worth method to evaluate the potential of expanding the academic curriculum offerings of a liberal arts college*. Paper presented to the annual meeting of the Mid-South Educational Research Association, Baton Rouge, LA.

Dunn, B.P. & Sullins, W.R. (1982). Cost-benefit analysis: Applicability in higher education. *Journal of Education Finance, 8*(1), 20-32.

Ehrenberg, R.G. (2012). American higher education in transition. *Journal of Economic Perspectives, 26*(1), 193-216.

Engleman, S.R. & Forbes, J.F. (1986). Economic aspects of health education. *Social Science & Medicine, 22*(4), 443-458.

Farvacque-Vitkovic, C. & Kopanyi, M. (2014). *Municipal finances: A handbook for local governments*. Washington, DC: The World Bank.

Gallagher, B.J. (2011). The economics of producing biodiesel from algae. *Renewable Energy, 36*(1), 158-162.

Gibson, C.A. (2015). *The impact of Australia's carbon price on the selection and optimisation of prime movers in combined heat and power systems using a thermo-economic approach*. Unpublished thesis: University of Sydney.

Gilani, S., Aris, M., & Petrus, T. (2014). Energy saving technique for cooling dominated academic building: Techno-economic analysis of its application. *Applied Energy, 132*(2014), 192-199.

Graber, R. & Rothwell, G. (2006). Valuation and optionality of large energy industry capital investments. *Cost Engineering*, *48*(8), 20-26.

Harlow, K. & Sportsman, S. (2007). An economic analysis of patient simulators for clinical training in nursing education. *Nursing Economics*, *25*(1), 24-29.

Harris, D.N. (2013). *Addressing the declining productivity of higher education using cost-effectiveness analysis: Stretching the higher education dollar; Special report 2*. Retrieved from: http://eric.ed.gov/?id=ED541919

Hitt, M., Ireland, D., & Hoskisson, R. (2015). *Strategic management: Competitiveness and globalization*. Stamford, CT: Cengage.

Hummel-Rossi, B. & Ashdown, J. (2002). The state of cost-benefit and cost-effectiveness analyses in education. *Review of Educational Research, 72*(1), 1-30.

Hunt, C.M., Oosting, K.W., Stevens, R., Loudon, D., & Migliore, R.H. (1997). *Strategic planning for higher education*. Binghampton, NY: The Haworth Press.

Jung, I. (2005). Cost-effectiveness of online teacher training. *Open Learning: The Journal of Open, Distance, and e-Learning, 20*(2), 131-146.

Kastner, H. (1977). Cost/benefit analysis of community college education. *Community College Review, 4*(3), 17-26.

Khan, S.A. (2014). Decision making using engineering economic tools: A real case study. *Industrial Engineering & Management, 3*(2), 1-6.

Langston, J.P., Kirby, E.W., Nielsen, M.E., Smith, A.B., Woods, M.E., Wallen, E.M., & Pruthi, R.S. (2013). Economic impact of training and career decisions on urological surgery. *The Journal of Urology, 191*(3), 755-760.

Lasher, W. (2005). *Practical Financial Management*. (4th ed.). Thomson-Southwestern Publishing: Mason, OH.

Levy, D. (2007). Public money for private higher education. *International Higher Education, 2007*(49), 14-15.

Lyken-Segosebe, D. & Shepherd, J.C. (2013). *Learning from closed institutions: Indicators of risk for small private colleges and universities*. Nashville, TN: Tennessee Independent Colleges and Universities Association.

Malony, R.J. (2011). *Analysis of staff scheduling effect on hospitality staffing service efficiency during high-occupancy conditions using discrete event simulation (DES)*. Unpublished master's thesis. Daytona Beach, FL: Embry-Riddle Aeronautical University.

McElreath, D., Doss, D., Jensen, C., Mallory, S., Wigginton, M., Lyons, T., Williamson, L., & McElreath, L. (2015). The failed hope of education and vocational training in the correctional setting: Emphasizing the importance of using education and employment in breaking the cycle of recidivism. *Proceedings of the Mustang International Academic Conference, 7*(1), 26.

Megginson, W. & Smart, S. (2006). *Introduction to Corporate Finance*. (Instructor's Edition). Thomson-Southwestern Publishing: Mason, OH.

Meybodi, M.A. & Behnia, M. (2013). Australian coal mine methane emissions mitigation potential using a Stirling engine-based CHP system. *Energy Policy, 62*(2013), 10-18.

Meyer, K.A. (2004). The impact of competition on program quality. *Planning for Higher Education, 32*(4), 4-13.

Monnet, D. (2005). Antibiotic development and the changing role of the pharmaceutical industry. *International Journal of Risk and Safety in Medicine*, *19*(2005), 133-145.

Mupinga, D.M. (2007). Students' positive and negative experiences in hybrid and online classes. *College Student Journal, 41*(1), 242-248.

Navaratnam, K.K. & Hillison, J. (1985). Determining economic outcomes of vocational education. *Journal of Vocational Education Research, 10*(4), 1-11.

Navaratnam, K.K. & Hillison, J. (1987). A cost-benefit analysis model for secondary vocational education programs: A new approach. *Journal of Vocational and Technical Education, 4*(1), 48-58.

Needles, B., Powers, M., & Crosson, S. (2011). *Principles of accounting*. (11th ed.). Mason, OH: South-Western Cengage Publishing.

Nieto, A. & Bascetin, A. (2006). Mining cutoff grade strategy to optimize NPV based on multiyear GRG iterative factor. *Mining Technology*, *115*(2), 59-64.

Olutola, A. (1979). The value of cost-benefit studies in education. *Journal of Educational Administration and History, 11*(2), 48-52.

O'Neil, K., Singh, G., & O'Donoghue, J. (2004). Implementing elearning programmes for higher education: A review of the literature. *Journal of Information Technology Education, 3*, 313-323.

Ono, H. (2007). Does 'examinational hell' pay off? A cost-benefit analysis of 'Ronin' and college education in Japan. *Economics of Education Review, 26*(3), 271-284.

Parker, C.A. (1975). Cost-benefit analysis in nontraditional education. *NACUBO Professional File, 7*(1), 5.

Paul, S. (1972). An application of cost-benefit analysis to management education. *Journal of Political Economy, 80*(2), 328-346.

Poteliene, S. & Tamasauskiene, Z. (2013). Human capital investment: Measuring returns to education. *Social Research, 4*(33), 56-65.

Rogers, M. & Duffy, A. (2012). *Engineering project appraisal*. (2nd ed.). Hoboken, NJ: John Wiley & Sons Publishing.

Rizzuto, C. (1982). Mandatory continuing education: Cost versus benefit. *Journal of Continuing Education in Nursing, 13*(3), 37-43.

Scott, C.E., Williams, N.A., & Derrick, F.W. (2015). Public state subsidy of private higher ed institutions: Does it pay for itself in Maryland? *Atlantic Economic Journal, 43*(3), 337-348.

Schaffer, D.R. & Mory, S. (1977). *A cost-benefit model for the instructional development services*. Retrieved from: http://eric.ed.gov/?id=ED140856

Sengar, S.H., Patil, S.S., & Chendake, A.D. (2013). Economic feasibility of briquetted fuel. *Global Journal of Researches in Engineering, 13*(1), 21-26.

Shekhar, G.V. (2010). *Business policy and strategic management*. New Delhi,

India: I.K. International Publishing House.
Skrepnek, G. & Sarnowski, J. (2007). Decision-making associated with drug candidates in the biotechnology research and development (R&D) pipeline. *Journal of Commercial Biotechnology*, *13*(2), 99-110.
Smith-Stoner, M. & Willer, A. (2003). Video streaming in nursing education: Bringing life to online education. *Nurse Educator, 28*(2), 66-70.
Stoneberg, B.D. (2015). Real cost-benefit analysis is needed in American public education. *Practical Assessment, Research, & Evaluation, 20*(15), 15-17.
Taberno, A., Del Valle, E.M., & Galan, M.A. (2012). Evaluating the industrial potential of biodiesel from a microalgae heterotrophic culture: Scale-up and economics. *Biochemical Engineering Journal, 63*(2012), 104-115.
Tan, E.C., Marker, T.L., & Roberts, M.J. (2014). Direct production of gasoline and diesel fuels from biomass via integrated hydropyrolysis and hydroconversion process—A techno-economic analysis. *Environmental Process & Sustainable Energy, 33*(2), 609-617.
Teixeira, P., Rocha, V., Biscaia, R., & Cardoso, M.F. (2013). Competition and diversification in public and private higher education. *Applied Economics, 45*(35), 4949-4958.
Timmons, M.B., Weiss, R.L., Loucks, D.P., Callister, J.R., & Timmons, J.E. (2014). *The entrepreneurial engineer: How to create value from ideas*. New York, NY: Cambridge University Press.
Townsley, M.K. (2014). *Financial strategy for higher education: A field guide for presidents, CFOs, and boards of trustees*. Morrisville, NC: Lulu Publishing.
Walsh, K., Levin, H., Jaye, P., & Gazzard, J. (2013). Cost analyses approaches in medical education: There are no simple solutions. *Medical Education, 47*(10), 962-968.
Wang, V.C. (2013). *International education and the next generation workforce: Competition in the global economy*. Hershey, PA: IGI Global.
Wanjin, Z. & Jianmin, C. (1991). Some economic aspects of the language situation in China. *Journal of Asian Pacific Communication, 2*(1), 91-101.
Whitman, D. & Terry, R. (2012). *Fundamentals of engineering economics and decision analysis*. San Rafael, CA: Morgan and Claypool Publishing.
Witmer, P. & Kelley, C. (2005). Sell it or rent it? *Journal of Accountancy*, *199*(6), 86-88.
Zendejas, B., Wang, A.T., Brydges, R., Hamstra, S.J., & Cook, D.A. (2013). Cost: The missing outcome in simulation-based medical education research: A systemic review. *Surgery, 153*(2), 160-176.

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