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I am submitting herewith a dissertation written by Jason Caudill entitled “A Financial Model for the Launch and Operation of an Online Degree Program by a Public Higher Education System.” I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

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A Financial Model for the Launch and Operation of an Online Degree Program by a Public
Higher Education System

A Dissertation Presented for
the Doctor of Philosophy
Degree
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Jason Caudill
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DEDICATION

To Mom and Dad – I wonder if you had any idea that taking me to college with you would lead to my being a professor when I grew up. This degree is yours as much as mine and I never could have attempted it without you.

And to my wife, Julia – I met you during comps, married you writing my prospectus, and now it's finally finished. Thank you for believing in me and being right next to me to fight the fight and win.

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ABSTRACT

This research study reviewed available literature on financial models for online degree programs. The review focused on theories adapted from business methodology and applied to online education. The primary theories used to develop the financial model were associated with Activity Based Costing (ABC). Data were collected from the Tennessee Board of Regents (TBR) Regents' Online Degree Program (RODP) and from the eCommunity Schools reports from the state of Ohio.

Table of Contents

DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
LIST OF FIGURES	ix
CHAPTER I	1
INTRODUCTION	1
Introduction and Background	2
Statement of the Problem	3
Statement of Purpose	3
Research Objectives	4
Definition of Terms	5
CHAPTER II	11
LITERATURE REVIEW	11
Review of the Literature	12
Relevant Literature from the Discipline of Education	12
Introduction	12
Cost Modeling of Traditional Education	12
Online Education	15
Conclusion	32
Relevant Literature from the Discipline of Business	32
Introduction	32
Business Literature Related to Online Education Modeling	32
Business Literature Supporting Methodology	35
Conclusion	39
Conclusions	39
Limitations of the Study	41
CHAPTER III	43
METHODOLOGY	43
Purpose	44
Methodology	44
Data Sources	44
Data Collection	46
Data Analysis	47
Delimitations of the Study	48
Introduction	48
Creation of the OPERA Model	49
Application of the OPERA Model	49
Testing the OPERA Model	50
Conclusion	50
CHAPTER IV	51

RESULTS	51
Results of Data Collection	52
Data Analysis Process.....	52
Summary Overview of the OPERA Model	67
Analysis of Costs by Category.....	68
Technology	68
Administration	69
Instructional Cost.....	70
Instructional Cost per Student and per Credit.....	71
Course Development.....	72
Marketing.....	74
Facilities.....	75
Student Support.....	76
Administrative Overhead	77
Trend Changes by Fiscal Year	78
CHAPTER V	85
CONCLUSIONS.....	85
The OPERA Model.....	86
Growth	89
Using the OPERA Model.....	89
Future Research Opportunities	91
Conclusion	92
LIST OF REFERENCES.....	93
APPENDICESAPPENDIX A.....	99
APPENDIX A.....	100
APPENDIX B Functions in the Value Chain	101

APPENDIX C Value Chain Components and Their Related Cost Drivers

VALUE CHAIN ACTIVITIES	COST DRIVERS
Structural activities	
Manage location and articulate strategy. Location and strategic choices need constant articulation and are considered cost drivers. Activities in this category include framing the market opportunity, managing the scope of the market, managing the value proposition, managing the organization's unique resource system, articulating the financial model, and managing integration (vertical or horizontal).	number and location of satellite campuses, number of industry and social segments in which the institution is present, number of students or registrations
Manage technology. What process does the online learning institution use to manage its technology through the value chain? The level of expertise and effectiveness of use, compared to competitors, will affect overall organization-level costs.	types of process technologies
Manage complexity of university offerings. The breadth of the programs and courses being offered is an important driver of costs.	number of different courses and programs
Manage institutional structure. Financial structure, accountability, and debt level affect many costs and the organization's flexibility.	debt level, debt capacity, tax status (favorable or unfavorable)
Gain experience, learn, and manage skill sets. An organization's learning, growth, experience, and application of that experience drive significant portion of cost. For example, when a university lacks experience in developing online courses, this fact would be a significant driver of its online course introduction costs.	effectiveness of professional training, team building, knowledge sharing, economies of scale

Figure 3-5.
Examples of value
chain activities and
cost drivers.

APPENDIX D	102
VITA	105
VITA	108

LIST OF FIGURES

Table 1: Data Sources by Year	53
Table 2: Technology Cost Category Components by Fiscal Year	55
Table 3: Administration Cost Category Components by Fiscal Year	56
Table 4: Instructional Cost Cost Category Components by Fiscal Year	57
Table 5: Course Development Cost Category Components by Fiscal Year	57
Table 6: Marketing Cost Category Components by Fiscal Year	58
Table 7: Facilities Cost Category Components by Fiscal Year	58
Table 8: Student Support Cost Category Components by Fiscal Year	59
Table 9: Administrative Overhead Cost Category Components by Fiscal Year	60
Figure 1: Technology Cost as a Percentage of Total Cost	65
Figure 2: Percentage Change in Enrollment versus Percentage Change in Administration Cost	66
Figure 3: Instructional Cost as a Percentage of Total Cost	67
Figure 4: Dollar Cost per Student and per Credit by Fiscal Year	68
Figure 5: Percentage Change in Course Development Cost versus Percentage Change in Credit Hours Delivered	70
Figure 6: Percentage Change in Enrollment versus Percentage Change in Marketing Cost	71
Figure 7: Facilities Cost as a Percentage of Total Cost by Fiscal Year	72
Figure 8: Student Support Dollars per Student by Fiscal Year	73
Figure 9: Percentage Change in Total Enrollment by Fiscal Year, with trend line	75
Figure 10: Percentage Change in Total Credits Generated by Fiscal Year, with trend line	75
Figure 11: Percentage Change in Total Instructional Costs by Fiscal Year, with trend line	76
Figure 12: Percentage Change in Instructional Cost per Student by Fiscal Year, with trendline	77
Figure 13: Percentage Change in Instructional Cost per Credit by Fiscal Year, with trendline	77
Figure 14: Percentage Change in Total Revenue by Fiscal Year, with trend line	78
Table 10: Percentage of Total Cost by Category by Fiscal Year	80

CHAPTER I
INTRODUCTION

Introduction and Background

As the delivery of online education in the United States grows, online education becomes an increasingly important component of the United States educational system as a whole. At the time this study was conducted in 2008, the annual growth of online post-secondary education is approximately 33%, with the majority of the growth fueled by a new base of older, working professional students (Bocchi, Eastman, & Swift, 2004). The demographics of today's higher education students are changing, and the need to reach this new, older, working student population is the driving force behind the rapid expansion of online education (Volery & Lord, 2000; Caudill, 2006). Gerhard and Mahr (2002) state that the online education market's "...combination of increased student numbers, new „customers', and increased number of teaching subjects created a lucrative environment for institutions of different backgrounds to engage in activities related to providing educational services." In any capitalist economic system, a lucrative environment will draw investors and create competition. This is already being seen in the online education market, evidenced by the fact that while only four or five percent of traditional higher education students are enrolled in for-profit institutions, 33% of online students are part of a for-profit institution (Howell, Williams, & Lindsay, 2003). With this pronounced shift in the market for educational services, traditional organizations of higher education must understand what kinds of resources are required to launch and maintain an online degree program so that they may be a competitive force in the growing demand for education of non-traditional students.

From its inception, an online degree program faces considerable obstacles to success in the market, often referred to as *barriers to entry*. Some of these barriers include: program costs, lack of equipment and support, scheduling, resource availability, instructional concerns, and technical assistance (Zirkle, 2003). Before launching an online program, an institution needs to have an estimate of those costs that will be a factor in their operation and the magnitude of such costs. In order to do this, administrators who desire to develop and implement an online program would benefit from the availability of a robust model-template that incorporates the critical cost elements or factors necessary for successful online planning and program development.

Statement of the Problem

As online education continues to grow as a market, many educational institutions are considering online degree programs as avenues for expanding the scope of their operations. At the time of this writing in 2008, no comprehensive study has been made of the actual costs of operating an online degree program in the United States (Schiffman, 2005; Rumble, 2001; Whalen & Wright, 1999). Therefore, institutions of higher education in the United States do not have a financial model projecting whether their entry into online education is fiscally feasible.

Statement of Purpose

The purpose of this study is to construct a financial model for estimating the costs for the launching and operation of an online degree program by a traditional higher education system. The financial model is based on historical data from an existing online degree program and should serve as a structural template to guide other online degree programs in program planning

and budgeting. The state of Tennessee's Regents' Online Degree Program (RODP) will serve as the subject of a case study to develop this model based on the RODP's actual experiences.

Further, comprehensive work already completed in Ohio's K-12 online education system will be used in combination with information from the RODP to design a detailed model of the expenses required to successfully launch and operate an online degree program. Because no comprehensive study of the costs of operating an online degree program has yet been published, the Ohio project's comprehensive study of a K-12 online education program will be used as an exemplar, in combination with data from the RODP, for development of the online program economic risk assessment (OPERA) model/template.

Very little published information exists on the financial structure of online education programs and the Ohio K-12 study is widely regarded as the most detailed study done prior to the completion of this study in 2008. The RODP has been recognized as a successful program and the RODP's length of operation provides a large volume of data from which to develop the OPERA model.

Research Objectives

- ◆ Apply Business and Education theory to existing financial data from an online degree program to develop an example of a financial model for an online degree program.
- ◆ Determine from available data the most likely cost categories in the launch and operation of an online degree program.

- ◆ Determine from the constructed financial model the most critical cost categories and how these categories relate to the production of revenue generated by student credit-hour income.

Given the relatively recent emergence of online education as a major market, online education is in the early stages of what is commonly referred to as the *product life cycle*. There are a large number of competitors in the market, and no single organization, or even type of organization, has claimed a dominant role. Given this current situation, the financial theories that most closely match online education are those of new venture and entrepreneurial finance, the study of how organizations are funded, launched, and developed into profitable operations. This is the perspective that frames the research objectives and from which the financial model-template of online degree programs will be constructed.

Definition of Terms

Activity Based Costing (ABC): Activity Based Costing is a method of measuring the cost and performance of activities and cost objects. ABC assigns cost to activities based on their use of resources and assigns cost to cost objects based on their use of activities. ABC recognizes the causal relationship of cost drivers to activities (Tarr, 2004).

Benchmarking: Benchmarking is an improvement tool whereby a company measures its performance or process against other companies' best practices, determines how those companies

achieved their performance levels, and uses the information to improve its own performance (iSixSigma, 2003).

Blended learning: Blended learning is an educational environment in which both traditional face-to-face instructional methods and distance education methods are employed in the same course.

Breakeven point: In general, the Breakeven point is the point at which gains equal losses (Scott, 2003a).

Common size analysis: Common size analysis is an Accounting practice of converting financial statement data from numerical data into percentages of a selected factor on the statement in order to provide comparable data between years without distortions of scale.

Cost: Cost is an expense that reflects the price of purchasing goods, services and financial instruments. A cash cost means that cash is given up today to the purchase. Cost is also defined as the purchase price of an investment, which is compared to the sale proceeds to determine capital gain or loss (Harvey, 2004).

Cost-Benefit Analysis: Cost-benefit analysis is the comparison of benefits and costs in decision making. Dollar values are assigned to benefits and costs in most cost-benefit analyses (Scott, 2003b).

Cost/Volume/Profit (CVP) Analysis: The CVP analysis is a financial decision making aid used to determine the level of output used to achieve any target profit level or the financial impact of basic business activities like changes in costs or pricing (The Free Dictionary, 2008a).

E-commerce: Electronic commerce, commonly known as e-commerce or eCommerce, consists of the buying and selling of products or services over electronic systems such as the Internet and other computer networks (The Free Dictionary, 2008b).

E-marketing: Internet marketing, also referred to as online marketing or Emarketing, is marketing that uses the Internet (The Free Dictionary, 2008c).

Financial Model: A Financial Model is a mathematical representation of key financial and operational relationships (Business Dictionary, 2008).

Fixed Cost: Fixed costs are expenses whose total does not change in proportion to the activity of a business, within the relevant time period or scale of production (The Free Dictionary, 2008d).

Initial Public Offering (IPO): An Initial Public Offering (IPO) is the first sale of stock by a private company to the public (The Free Dictionary, 2008e).

Market: A market is a social arrangement that allows buyers and sellers to discover information and carry out a voluntary exchange of goods or services (The Free Dictionary, 2008f).

Market Segment: A Market segment is a subgroup of people or organizations sharing one or more characteristics that cause them to have similar product needs (The Free Dictionary, 2008g).

New Economy, The: The New Economy is the "full effects on social, economic, and political systems of the [information and communications technologies] revolution" centered on the computer (Moffat, 2002).

Online degree program: An online degree program is a higher education curriculum resulting in a certificate, diploma, undergraduate, or graduate degree, delivered via computer-based, networked technology. In this work the term online degree program is synonymous with online education program.

Paradigm: A paradigm is a philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated. Paradigm can be broadly defined as a philosophical or theoretical framework of any kind (Paradigm, 2008).

Product Life Cycle: A marketing theory in which products or brands follow a sequence of stages including: introduction, growth, maturity, and sales decline (Lake, 2003).

Return on Investment (ROI): ROI is the ratio of money gained or lost on an investment relative to the amount of money invested (The Free Dictionary, 2008h).

Revenue: Revenue is the amount of money that a company receives from its activities in a given period, mostly from sales of products and/or services to customers (The Free Dictionary, 2008i).

Traditional degree program: A traditional degree program is a higher education curriculum resulting in a certificate, diploma, undergraduate, or graduate degree, delivered via classroom-based instruction that requires instructors and students to regularly meet in the same location at the same time. In this work a traditional degree program is also referred to as physical school education.

Value Chain: A value chain is a chain of activities. Products pass all activities of the chain in order and at each activity the product gains some value. The chain of activities gives the products more added value than the sum of added values of all activities (The Free Dictionary, 2008j).

Variable Cost: Variable costs are expenses that change in proportion to the activity of a business (The Free Dictionary, 2008k).

Venture Capital: Venture capital is a type of private equity capital typically provided by professional, outside investors to new, growth businesses (The Free Dictionary, 2008l).

Venture Capitalist: Venture capitalist refers to an investor who provides capital to either start-up ventures or support small companies who wish to expand but do not have access to public funding (Funding Post, 2008).

CHAPTER II

LITERATURE REVIEW

Review of the Literature

Relevant Literature from the Discipline of Education

Introduction

The review of literature from Education addresses two primary goals for the research proposed in this study. The first is to use information from existing online educational enterprises to determine different cost categories for an online program. These categories will be important components of the OPERA (online program economic risk assessment) model. The second goal is to present evidence of past research efforts, applying Business methodologies to the analysis and management of educational organizations. The evidence collected and presented from past research efforts is intended to establish the legitimacy of incorporating Business theory into the research of developing and managing online education programs.

Cost Modeling of Traditional Education

An understanding of the costing environment for traditional education is a good base from which to discuss the costs of online education. Extensive work in this area has been performed by the National Association of College and University Business Officers (NACUBO). Detailed information about the cost structure of traditional education is presented in NACUBO's 2002 study, *Explaining College Costs*.

The NACUBO study recognized that there are considerable differences among higher education institutions' financial practices, an obstacle to constructing a comprehensive financial model.

To overcome the complexity of college and university finances and the varied cost accounting systems institutions employ, the Ad Hoc Committee (the group conducting the study for NACUBO) adopted four principles that guided discussions about how to achieve balance in the composition and definition of the data needed to complete the new methodology:

- Rely on basic averaging techniques.
- Concentrate on the cost of undergraduate education.
- Use existing cost allocation methods wherever possible.
- Keep it simple. (NACUBO, 2002, p. 8).

NACUBO's recognition of a need to maintain simplicity in a financial model will be important to the construction of the OPERA model. Because the OPERA model is the first attempt at a comprehensive financial model of an online degree program the model will utilize existing data and existing analysis techniques as a part of the design process. The NACUBO experience illustrates that even in cases where extensive historical data is available these approaches are necessary to assemble a new financial model. Much like the current study, NACUBO's study was designed to provide higher education institutions with information about what educational costs they could expect to encounter; the study did not use a random sample of institutions and was not meant to assess program quality (NACUBO, 2002).

For the use of the data, NACUBO explains that the methodology, "...provides a mechanism that any college or university can employ to present its own cost and price data in a standard format..." (NACUBO, 2002, p. 9). Additionally, "The methodology also has the

potential as an internal management tool, allowing individual institutions to track costs across consistent categories, and then compare costs with those at other institutions having similar missions and structure” (NACUBO, 2002, p. 10). The methodology proposed by the NACUBO model is very similar to that intended for the OPERA model. Because of differences in educational institutions it is unlikely that a single model can provide detailed information to different educational institutions, but a single model can serve as a tool on which to model and compare costs from actual operating results.

While the NACUBO study shows considerable differences in costs among the educational institutions in their sample, it is consistent that the majority of cost for undergraduate education, approximately 85%, goes to instruction and student services (NACUBO, 2002). Also seen in almost every sample of the NACUBO study is that the cost of providing an undergraduate degree to a student exceeds the price that the student was charged (NACUBO, 2002). The discrepancy between cost and price for a degree program may be seen to differ between traditional and online degree programs, as online programs are often more responsible for producing their own funding (Hanna, 1998).

The NACUBO study provides information on how a cost model for higher education can be created and how that model may be useful to other institutions. In creating the OPERA model it may also be necessary to define broad cost categories and construct a simple financial model in order to build a financial model that is of use to other educational institutions. The NACUBO study also establishes a precedent of building a financial model for a higher education degree program from a non-random sample. Using sample data from existing educational institutions

can serve as a tool to construct the cost model, but because of the complexity of educational institutions the results cannot be extrapolated to all educational institutions (NACUBO, 2002).

Online Education

The first step in building a model-template of any organization is to understand the market in which that organization operates. The market for higher education, particularly the online component of higher education, is unique, and the initial Education literature review explores this specific market. The online education market is expanding beyond traditional non-profit educational organizations, and new for-profit organizations are changing the competitive environment (Douglass, 2005; Baer, 2001).

Contributing to the expansion of the online education market is the lack of geographic constraint for the market. As the market expands it not only provides opportunities to more market participants, it also allows for globalization of the market to occur (Douglass, 2005). Because the market is expanding, incorporating new competitors, and becoming a global market, it is increasingly important for organizations participating in online education to use, "...more systematic analysis at the regional and local levels, and specifically at the institutional level, to help us more fully understand what is actually happening" (Douglass, 2005, p. 3). For any competitive market, a major component of analysis is financial analysis. To perform a financial analysis, an organization needs a financial model-template such as the OPERA model from which to work.

Further indicating the need for detailed analysis in an increasingly complex and competitive market are Douglass' (2005) indicators of a paradigm shift in the online education industry:

- Changing Recruitment Markets for Students and Faculty
- International Networks of Academic Researchers Replacing (Replaced) National and Institutional Cultures
- International Collaborations
- Trend Toward Organizational Convergence
- Instructional and Computer Technologies Are Opening New Markets and Bringing a Revolution in Traditional University Organizations
- Rise of Non-Traditional and Alternative Competitors
- Repositioning of Existing Institutions into New Markets and Mergers
- International Frameworks Related to Education Services (Douglass, 2005, p. 23)

Douglass (2005) proposes that the Business practices of market analysis and competitive forces can be applied to the market for online education. Capitalizing on emerging market opportunities is one of the identified reasons for an organization to enter into the online education market (Oblinger & Kidwell, 2000). This lends legitimacy to the concept of applying Business theory to the Educational market, which is the methodology that will be applied by this study. While market growth is an important part of an organization's analysis of online learning, the reasons for market growth are also important.

Two factors are combining to create the growth of the online education market; increased demand for learning and technological advances to support the online delivery of learning (Hanna, 1998). The "...combination of demand, costs, content application, and new technologies is opening the door to emerging competitors and new organizations that will compete directly for students and learners" (Hanna, 1998, p. 67). Again, market growth is connected to increased competition in online education. To meet the demands of the changing market, educational organizations need to adopt new ways to operate. The move to online education brings new competition to the field of education (Berge, 1998). Traditional educational organizations need to move to working as an extended traditional university (Hanna, 1998). Appendix A contains a summary of Hanna's organizational format for the extended traditional university.

The uniqueness of new online education organizations is not just a question of organizational structure. Typically, the funding for online educational organizations is also different (Hanna, 1998). Online education programs normally serve more adult learners, are more market-responsive, and are more responsible for creating their own revenues than traditional education programs (Hanna, 1998). Because online education programs have different financial responsibilities compared to traditional programs, specifically the responsibility to generate higher revenues to support their own operating expenses, online education programs have a different need for financial information. In the expanding market for higher education there is a great potential for organizations to generate income, and this opportunity is being actively pursued by for-profit organizations employing Business strategies to enter and succeed in the online education market (Hanna, 1998). Another tactic through

which traditional higher education institutions can generate higher revenues is by directly partnering with business organizations (Newman & Couturier, 2001). The use of Business strategies by for-profit online education providers indicates that these strategies can help contribute to success in the online education market (Levy, 2003). If Business strategies are contributors to successful entry and operation in the online education market then higher education organizations offering online degree programs could benefit from the application of Business strategies to their operations.

How will organizations offering online degree programs interact with the growing and highly competitive market for online degrees? How organizations interact with the online education market will define the competitive strategies available to the organizations. The online education market is actually comprised of several markets, including markets for students at the undergraduate and graduate levels, a market for researchers, faculty, funding, and other components of higher education (Jongbloed, 2003). For a higher education organization to be successful it is necessary to consider market forces such as what customers will be served, how the service will be delivered, and even what the service, education, actually is (Oblinger & Kiwell, 2000). The complex forces involved in the online education market, seen in part by the many different components that exist within the market, play a significant role in determining the survival of an organization entering into the market (Jongbloed, 2003).

Costing is directly connected to the issue of online educational organizations' survival. Beginning with an organization's potential entry into the online education market, the cost of the initial investment may be prohibitive (Jongbloed, 2003). Early online program costs are often higher than the continuing costs and there will likely be significant startup costs (Downes &

Center, 2001). Beyond the initial entry into the online education market an organization faces continued cost issues and must have consumers pay a price for the program that is related to the cost of the program (Jongbloed, 2003). From a basic Business perspective, an organization must know how much a product costs and how much to charge customers for that product. To determine how much a product costs, an organization must first determine what the costs of creating and delivering the product are. This determination will be aided by a financial model-template such as the OPERA model. The overall impact of the Jongbloed work is to illustrate the criticality of online program cost knowledge to the survival of an online degree program.

Cost is not an isolated factor in the operation of online degree programs. Online education organizations must undertake detailed market analyses, focusing on the movement of the markets as a whole as well as the demands of customers (Hämäläinen, Whinston, & Vishik, 1996).

For-profit online education providers are applying Business analysis methods to improve their market performance. Because market analysis is part of the competitive market for online education programs higher education organizations need to be familiar with market analysis to remain competitive with the for-profit online education providers. To answer these market movements and customer demands, online education organizations must design organizational financial systems to pay suppliers, bill customers, and collect from customers (Hämäläinen, Whinston, & Vishik, 1996). Because of the changes in both scale and technology of online education cost systems are changing for educational organizations, with the potential existing to “...deliver a quantum leap in economies of scale and associated cost-effectiveness” (Taylor,

2001, p. 4). Again, financial considerations that are prevalent in Business practice are linked to the successful operation of an online degree program.

The specific Business practices highlighted by Hämäläinen, Whinston, & Vishik (1996) are those practices connected to ecommerce. To operate, "...education brokerages [online education organizations] will draw on the standard electronic commerce methods to deliver information over the networks, ensure the security of this information, carry out transaction processing and electronic payments, and route the traffic to the appropriate Internet servers" (Hämäläinen, Whinston, & Vishik, 1996, p. 55). Transactions and payments are identified as part of an organization's operating requirements when working with online degree programs. In relation to the issues of budgeting and costing Hämäläinen, Whinston, and Vishik (1996) also mention that higher education organizations in the current market are working with rising costs and decreasing budgets. Research indicates that while enrollment is rising in public higher education organizations the funding from state governments is decreasing and has been doing so for several years (Lee & Clery, 2001). In an environment where costs are going up and funding is going down it is of even greater importance for an organization to maintain an accurate picture of their financial operations. In order to maintain this picture a financial model-template such as the OPERA model could be a useful tool.

To create the OPERA model the financial components of an online degree program must be defined. In order to define these financial components, the population served by an online degree program must be defined. To define this population, "Long-term demographic and economic projections are routinely produced by public and private organizations in order to provide decision makers with a basis for planning future capital and operational expenditures"

(Reeve & Perlich, 2002, p. 2). The connection of financial planning to demographics indicates that there is a need for an organization to know the per-student cost of an online degree program as part of the financial planning process.

The online education market as a whole is affected by several trends. Howell, Williams, and Lindsay (2003) compiled a list of thirty-two trends affecting distance education, six of which are directly connected to market and financial issues in online education. Those six trends are:

1. The current higher education infrastructure cannot accommodate the growing college-aged population and enrollments, making more distance education programs necessary (Trend #1, p. 2).
2. The institutional landscape of higher education is changing: traditional campuses are declining, for-profit institutions are growing, and public and private institutions are merging (Trend #14, p. 6).
3. There is a shift in organizational structure toward decentralization (Trend # 15, p. 7).
4. Higher education outsourcing and partnerships are increasing (Trend #18, p. 8).
5. With the economy in recession, there are fewer resources for higher education and higher education initiatives, such as distance education (Trend #25, p. 10).
6. Funding challenges are the top IT concern for many (Trend #26, p. 10).

Trend 1, addressing the growing student population for higher education, is connected to the changing, and growing, market for higher education and for online education as a component of higher education. Trend 2 is also market-related, highlighting the changing demographics of

organizations offering higher education to the new student market. Trend 3 follows this with an example of the internal changes being seen in response to the market changes indicated by trends 1 and 2. Trend 4 reinforces the assertions in trends 2 and 3 that the organizational structure of higher education organizations is shifting.

Trends 5 and 6 move into financial considerations. Trend 5 addresses the revenue side of the financial equation and trend 6 addresses costs. Funding issues are further emphasized in the work of Crawford and Rudy (2003), as,

A study from the Colorado Department of Education reported that „the cost per student of a high-quality online learning program is the same as or greater than the per-student cost of physical school [i.e., traditional] education’. The study also explained that most costs in education are for staffing. EDUCAUSE reported similar results: „IT Funding Challenges has become the number-one IT-related issue in terms of its strategic importance to the institution, its potential to become even more significant, and its capture of IT leaders’ time’ (p. 10).

The cost of online versus traditional education programs is an issue of some debate in the literature. Different studies have indicated different relationships between the cost of online and traditional education. These differences raise questions about what the cost of online education really is, especially as it relates to the cost of traditional education. The OPERA model may be helpful in addressing this question.

The Crawford and Rudy (2003) work identifies two important points. First, the cost of online education is not lower than the cost of traditional education. Second, staffing is the largest cost category for an online program. This should not be surprising, as research shows that staffing is the largest expense for higher education as a whole (University of Delaware, 2008). These two points will be of particular interest in the creation of the OPERA model to test whether or not Crawford and Rudy's findings are consistent with the findings of the OPERA model.

Moving from the overall market perspective to more detailed points of online program development helps to identify the details of what the OPERA model needs to address. In order to identify the critical issues to be addressed by a financial model-template, the advantages to the organization launching an online degree program must be identified. The advantages offered by online education are expanding access, alleviating capacity constraints, capitalizing on emerging market opportunities, and serving as a catalyst for organizational transformation (Volery & Lord, 2000).

These advantages address both the market for online education and the financial implications of an organization's entry into that market. The market for online education is growing and new student populations are demanding access to educational resources. To address this changing market, organizations need to expand their operations. As a part of this expansion organizations are seeing opportunities to capitalize on the new markets and increase organizational revenues. At the same time, public funding is decreasing, which demands increased revenue generation by the organizations themselves. The common thread among all of

these opportunities is that they require sound financial management to function, which emphasizes the need for information about the financial structure of an online program.

For an existing organization to enter into the online education market that organization needs to understand the financial planning that will be required. The first financial issue for a new online degree program is the cost of the program. Deploying a new online degree program may not have any cost savings unless the program can be properly scaled (de Freitas & Oliver, 2005).

This brings into question the financial feasibility of an organization's entry into online education. De Freitas and Oliver (2005) provide a list of factors that an organization should consider when entering into e-learning:

Based on this analysis, the following factors should be considered when developing and implementing e-learning strategy across an organisation *[sic]*:

- 1) Whether a top-down, bottom-up approach or a combined approach would yield better results for implementing an e-learning strategy.
- 2) Consideration of the scale and extent of e-learning already being undertaken within the organization *[sic]*.
- 3) Consideration of the amount of investment needed to achieve desired results of implementing an e-learning strategy, including a costing of additional technical and pedagogical support, additional training, extra staffing costs and extra hardware/software costs.

- 4) Compare how other similar organizations *[sic]* have undertaken e-learning strategy implementation and with what results and pitfalls.
- 5) Conduct a consultation with experts, staff and learners within the organization *[sic]* to establish objectives and needs of user groups.
- 6) Consider how partnerships and collaboration both within and outside the institution could provide cost savings and better resource access.
- 7) Consider how the e-learning strategy would affect change in the organization according to two or more models listed above and correct the strategy accordingly (pp. 93-94).

Based on the factors above, many of an organization's multiple components will be impacted by an e-learning implementation and the resources that are required to support such an implementation. Of particular interest is the list of costing categories that determine the amount of investment required, and the recommendation to perform comparisons with other organizations. These two factors together provide considerable support for a study that creates a financial model-template of an online degree program as a reference for other researchers and organizations.

Financial modeling is, historically, based on Business theory and Business practice. In Education, there are many connections between online education and Business practice. Elloumi (2004) cites a lack of strategy as a major factor in the failure of online education programs. The "...high cost of technology, poor decisions, competition, and the absence of appropriate (or any) business strategies, especially market assessment of consumer demand" (Elloumi, 2004, p. 62)

are all reasons for online degree program failures. This does not mean that educational organizations have to focus on generating profits, but rather that in the highly competitive environment of online education organizations must plan and consider market conditions and costs in order to develop successful strategies for their new program.

Competitive advantage, that is establishing some aspect of an organization's performance as superior enough to other organizations that consumers will choose the superiorly performing organization over others, is linked directly to following "...appropriate business strategies..." (Elloumi, 2004, p. 62).

Competitive advantage is linked to three distinct strategies for an online degree program:

- 1) Low cost/price strategy: This is achieved through process efficiencies and/or the reduction of services
- 2) Differentiation: A unique combination of services that include quality employees and maintain low cost is necessary for this advantage to be sustained, it can not be easily replicated
- 3) Focus, this involves market segmentation and targeting. (Elloumi, 2004, p. 63).

With two of the three identified strategies connected to costing, the financial management of an online education program is critical to the program's strategic success. The need for strategies to address an online education provider's competitive position is based on the market forces that have provided so many organizations the opportunity to enter into competition with each other. Elloumi (2004) moves from this discussion of the competitive environment of online education as an industry to an examination of how costs work in an online environment.

Online education delivery demands the use of multiple categories of both technology and skilled employees. To function, "...online learning requires a heavy investment in technology (computers; servers; learning specific hardware; learning systems; acquiring authoring development tools, delivery tools, and collaboration tools; etc.) and also requires specialists (multimedia instructional designers, Web designers, technologists, faculty, etc.)..." (Elloumi, 2004, p. 68). What this means to the cost profile of an online instructional environment is that a large percentage of the total costs are fixed while there are some other costs, such as instructional materials, which are variable (Elloumi, 2004; Bartley & Golek, 2004). Therefore, to analyze the cost profile of online instruction Elloumi (2004) recommends the application of a cost/volume/profit (CVP) analysis. A financial model consists of two sides, costs and revenues. To generate revenue online degree programs collect tuition and fees from students and may also take advantage of government grants or the sale of instructional materials (Elloumi, 2004). Having defined both costs and revenues for an online degree program, the financial activities of an online education organization can be modeled.

The system that drives an organization's costs and revenues can be defined by the construction of a value chain, as defined in Chapter 1's definition of terms. Elloumi (2004) introduces the use of a value chain in examining the online educational environment, looking at the impact of such functions as inbound logistics, operations, outbound logistics, delivery and marketing, and service to learners. Appendix B contains a detailed listing of value chain functions. The value chain is constructed using a series of four steps. The four steps to the creation of a value chain are, "...identify value chain activities, determine which value chain activities are strategic, trace costs to value chain activities, and use the activity cost information

to manage the strategic value chain activities” (Elloumi, 2004, p. 77). The concept of Activity Based Costing (ABC) connects costs and revenues to components of the organizational value chain (Elloumi, 2004). Elloumi’s (2004) relation of value chain activities to cost drivers is available in Appendix C.

As further evidence of the validity of applying Business theories and practices to online education Elloumi (2004) says,

We argue that online learning institutions possess characteristics very similar to those of industrial organizations, and that, therefore, strategic planning is essential to their operations and their survival. Value chain analysis is an important tool for strategic management, and when competition is intense, companies must manage activities and costs strategically, or they will lose their competitive advantage (p. 88).

This is followed by a definition of the online education industry, “The industry of online learning is an open market for both for-profit and not-for-profit organizations” (Elloumi, 2004, p. 88). Elloumi’s (2004) work provides a direct application of Business practices, value chain analysis, CVP analysis, and ABC, to the study of online education. By further extending the application of Business theory to online education, online education can be defined as an e-commerce activity.

Distance learning is defined by some researchers as e-commerce. Granitz and Green (2003) explain that, “By recognizing online distance learning as e-commerce, new e-marketing theory and knowledge developed by academics and business practitioners can be applied to meet

many of the challenges of distance learning” (p. 16). This explains that some of the unique challenges posed by the online learning environment can be addressed with the application of Business theory and practice. Business strategies, particularly market strategies, have been applied to Education in the past as tools to better understand the educational process (Granitz & Green, 2003).

Based on past research, and on their own interpretation of the learning environment, specifically the idea that “From a business paradigm, course content now constitutes a product being transmitted via telecommunications technology” (p. 17), Granitz and Green (2003) have developed multiple tables linking the components of online education to e-commerce strategy. These tables are provided in Appendix D. Granitz and Green’s (2003) work illustrates a connection between Business theory and the practice of online education. Additionally, they have constructed models that relate the details of both practices to one another in practical application. This not only provides useful information about the different parts of an online education system that can benefit from e-commerce strategies, but also evidence that Business theory application can improve the practice of online education.

With evidence of Business theory applicability to online education there is the question of what Business theories directly apply to financial modeling. While there has not been work done to date in constructing a financial model-template of an online degree program, there has been work in evaluating the financial component of online education. The existing work must be reviewed to provide a theoretically sound foundation for the new model-template. Whalen and Wright (1999) use a case study methodology to analyze the costs of online education. While not

a full model, this is a primary component in the construction of a model and will contribute to the methodology of this study.

Whalen and Wright (1999) identify cost-benefit analysis as being beneficial to the study of an online learning environment and identify key components of the cost-benefit analysis process. The first component of Whalen and Wright's (1999) cost-benefit analysis process is the application of a breakeven analysis, defined as,

Breakeven Number of Students. To offset the high fixed costs of Web based courses, a certain number of students must be trained at a delivery cost per student of less than that of the delivery cost per student for classroom training. The number of students that offsets the fixed costs of Web-based training is the breakeven point (p. 25).

This is followed with the introduction of return on investment (ROI) as, "...the percentage that represents the net gain or loss of using Web-based training instead of classroom delivery. For example, an ROI of 300% means that \$3 was saved in reduced delivery costs for every \$1 spent on Web-based training" (Whalen & Wright, 1999, p. 26). ROI can be seen as an analysis tool for online education in the work of other researchers as well, such as Bartley and Golek (2004). The definition of breakeven analysis and ROI as applied to online education provides further evidence for the application of Business theory to online education. Whalen and Wright's (1999) study also notes that the course development costs, which are fixed costs, are higher for online courses than for traditional courses. Therefore, to realize savings in an online course a certain number of students must be enrolled to offset the high fixed costs of the course.

The most important contributions of the Whalen and Wright (1999) work to this study are that breakeven points are reduced by 75% after the first offering of the course and that the most significant cost factor in an online program is the volume of multimedia included in that course. This is not to say that multimedia is the largest dollar cost for a course, but that the amount of multimedia is the cost factor that can change the total cost of a course the most; adding more multimedia quickly adds more cost. These points provide an important insight into the possible cost categories for the overall financial model.

Specific financial performance measures taken from Business theory will be an important component of any financial model. One of the most frequently seen measures in the Business methodology is return on investment (ROI), which was seen in Whalen and Wright's (1999) work and is again highlighted by Singh (2003). Singh (2003) discusses a variety of topics related to blended learning. The most relevant to financial modeling is the statement that, "Organizations exploring strategies for effective learning and performance have to consider a variety of issues to ensure effective delivery of learning and thus a high return on investment" (p. 51).

The inclusion of ROI in the discussion of learning delivery systems serves to validate the need for financial research on how those delivery systems operate. ROI was also seen earlier in Whalen and Wright's 1999 work, establishing that the importance of ROI as a performance measurement for educational organizations has been recognized over time.

Conclusion

The Education literature reveals that multiple studies have utilized Business measures of performance such as return on investment and breakeven points to analyze educational operations. Also, the literature exposes categories of cost in online education such as employees, course development costs, technology, and others. Overall, this serves to provide a base of knowledge from which a new step in the application of Business methodology for Education analysis can be taken.

Relevant Literature from the Discipline of Business

Introduction

Reviewing Business literature will add details to the broad concepts of Business methodology introduced as a part of the review of Education literature. Much of the Business literature is centered on New Venture Finance and Entrepreneurial Management, fields that closely relate to the formation and launch of a new online degree program. Additionally, information is provided regarding the changing competitive environment and nature of high-growth industries, which serve to highlight the importance of developing detailed knowledge of how online degree programs function. The net effect of the Business literature is to provide not only justification for the importance of study into online degree program financing but also the tools that can be used to create the OPERA model.

Business Literature Related to Online Education Modeling

The first step in connecting the Business literature to Education is to establish that Business theory is interested in Education as an economic force. This connection is seen in

literature addressing the idea of The New Economy. The New Economy, as a new economic model, is centered on learning. One of the main themes seen in The New Economy is that more efficient, more accessible learning can be achieved through the application of technology, which connects to online learning.

De Geus and Senge (1997) discuss the concept of learning as a core activity for a business organization. Continuous learning in a business is in itself a strategy, and the maintenance and direction of this learning strategy is the direct responsibility of senior management (de Geus & Senge, 1997). This explains, in part, the growing and changing market for higher education by noting that for-profit corporate bodies have identified learning as a competitive advantage.

Much of the Education literature addressed online education as a new and expanding market. In Business theory the study of and entry into new markets by new providers is generally termed entrepreneurship, and the firms taking part in entrepreneurship are called new ventures. Therefore, the study of educational providers entering into online education is, from a Business perspective, an entrepreneurial venture. In order to provide a base of knowledge for online education as entrepreneurship, the entrepreneurial environment and the unique inputs that are part of an entrepreneurial firm must be defined. The beginning of a new venture, the funding of an entrepreneurial venture, is venture capital.

Venture capital is defined as, "... equity or equity-linked investments in young, privately held companies, where the investor is a financial intermediary who is typically active as a director, an advisor, or even a manager of the firm..." (Kortum & Lerner, 2000, p. 676). Venture capital and technological innovation are strongly linked, as venture funding is strongly

associated with corporate patenting (Kortum & Lerner, 2000). The positively correlated relationship between venture capital funding and technological innovation is important to building the OPERA model. Venture capital in the Business literature can translate to new program funding in the Education world. Based on Kortum and Lerner's (2000) study there is evidence that venture funding encourages innovative behavior.

For an organization launching a new online degree program the funding of the program is only one part of the planning. Benchmarking is also a valuable strategy to a new firm. By observing what other organizations have done over time, the best practices of an industry can be identified and adopted (Zimmerman & Zeitz, 2002). This points out that the processes of one organization can be useful to others. Given that benchmarking occurs, other organizations should benefit from having access to a financial model-template from one system, in the case of this study the OPERA model. Benchmarking, as a Business theory applied to Education, indicates that information developed for the Regent's Online Degree Program could be useful for other new entrants to the online education market by providing benchmark data to those new entrants.

Entrepreneurship is often thought of as a new company entering the market. While many times this is the case, entrepreneurial theory also applies to existing firms entering into a new line of business. Traditional organizations of higher education entering into the new market of online education are essentially existing firms entering into new markets.

For existing firms undertaking entrepreneurial activity the new venture activity is not limited to just one part of the organization. Activities related to entrepreneurship take place across an organization (Zahra, 1993). This means that a higher education organization launching

an online degree program may not see activities for the new program limited to just the online program. Activities, and by extension costs, may include many departments throughout the organization.

In relation to the costs incurred by a new venture, the costs are likely to change over the early life of the new venture. Zahra explains that,

Financial and non-financial criteria can be useful in evaluating the performance of a venture or the payoff from firm-level entrepreneurship at different points in time. For example, non-financial criteria can be insightful in the early years of an entrepreneurial project. Later, managers may wish to rely more heavily on financial than non-financial criteria (Zahra, 1993, p. 12).

This shift in evaluation based on the time of analysis for a new venture will be important in the development, and more critically in the application, of the OPERA model. Early on, a venture will probably not be self-supporting or profitable, so at that point in the life cycle the measurement of non-financial metrics of performance is important. As the venture grows and the model changes financial measures will become more useful.

Business Literature Supporting Methodology

The project's methodology is based on the work of Activity Based Costing (ABC) in the field of Business Administration and theories that extend from and compliment the ABC process, specifically the theories of cost breakdown structure, two-stage cost assignment, and product life cycles.

Angelis and Lee (1996) define Activity Based Costing as, “Activity based costing, as the name suggests, traces costs to products through activities. Activities, rather than products, consume resources, and the demand for those activities in the manufacturing process determines how the costs are allocated to the individual products” (p. 1332). In application, ABC is not simply a tabulation of costs, but rather, “Beyond mapping the organization's activities, ABC assigns dollars to each of these activities, thus disclosing the true cost of doing business” (Angelis & Lee, 1996, p. 1331). This mapping of activities will reveal cost categories in the RODP.

The work of Tsai (1996) will be applied to the ABC base. Tsai’s (1996) work is in what is termed costing for joint products, which is described as, “Joint products are produced simultaneously by a common process or series of processes” (p. 726). This is closely connected to the distributed nature of course development and delivery that is practiced by the RODP. While all activity takes place under the overall authority of the RODP, individual campus units are developing courses, hiring and supervising faculty members, and assigning credit to students for completed classes. These disparate efforts are orchestrated and recorded by the student’s home campus. Another term that can be applied to the structure of the RODP is that the RODP is operating as a decentralized firm, an organizational model that can also benefit from the application of ABC. Banker and Hughs (1994) state that, “Given a decentralized firm, activity-based costing provides an aggregate product cost measure which conveys all the cost and production information that the marketing manager requires to make optimal pricing decisions” (p. 481). This is followed with an explanation of how the costing system drives other processes

in the organization, “The product costing system is designed first, before detailed information on production, cost or demand parameters is available” (Banker & Hughs, 1994, p. 482).

In order to work with ABC, cost categories must be defined. These categories are highlighted by Asiedu and Gu (1998) under the term “cost breakdown structure” (p. 892). Based on the work of Banker and Hughs (1994) basic cost data accessible through financial statements can be enough to create a usable cost model, without specific details about the scope of the operation.

The aggregation of costs into activity-based product costs does not require that the production (activity resource commitment) or the pricing problem be solved first. Rather, the aggregation only requires knowledge of production and cost parameters. More importantly, the pricing decision does not require any additional cost or production information beyond that contained in the aggregate activity-based product cost data... In other words, the marginal value of variable cost and normal support activity cost information conditional on the availability of the activity-based cost information is zero with respect to both pricing and activity capacity decisions (Banker & Hughs, 1994, p. 489).

As a final component of the overall modeling of the RODP’s financial operations the theory of life cycle modeling will be integrated into ABC. Asiedu and Gu (1998) discuss the implications of product life cycles in ABC and in relation to the survivability of the organization. Of particular importance is the development stage, explained as, “Studies ...suggest that the

design of the product influences between 70% and 85% of the total cost of a product” (Asiedu & Gu, 1998, p. 883). Termed Life Cycle Costing (LCC), Asiedu and Gu (1998) explain the importance of LCC as, “LCC analysis provides the framework for specifying the estimated total incremental costs of developing, producing, using, and retiring a particular item” (p. 890). Asiedu and Gu (1998) also explain that costing methodologies not only inform analysts of what is happening in a system, but they can actually improve an organization’s efficiency; “Through early implementation, cost analysis can not only influence the final design by providing the relevant cost information but can also contribute to cost reduction by identifying cost drivers and how changes in design parameters affect cost” (Asiedu & Gu, 1998, p. 890).

As a final support for the application of Life Cycle Costing to an organization, Asiedu and Gu (1998) close by specifying that, “...LCC analysis should not be seen as an approach for determining the cost of the system per se but as an aid to design decision making” (p. 904). The net effect of these multiple theoretical approaches to costing is to provide information about a system to decision makers. ABC provides a means by which to begin the aggregation of this analysis. Working from determined cost categories that are based on the organization’s activities, the joint product costing method and cost breakdown theory indicate that cost data from these categories can deliver usable information to a decentralized operation such as the one in place with the RODP. Finally, LCC analysis provides a method by which the different stages of the development of the RODP can be identified and analyzed to gain another level of decision making information. As a whole, these three theories combine to form a map of financial modeling for a decentralized organization, the purpose of which is to create information that is useful to the individuals making decisions about the operation of the organization.

Conclusion

The Business literature provides many examples of how new ventures function and how the invested funds may need to be disbursed to support the new operation. By integrating this knowledge into the work already done in the field of Education, a model-template can be developed that integrates the behaviors of new venture entities with new online degrees.

For the purposes of this study, the primary Business theory that will be applied is Activity Based Costing. This model-template can effectively produce a picture of an organization's cost structure based on activities from aggregate data and does not require extensive details on the operation. ABC also works with a decentralized organization, such as RODP.

Conclusions

The literature has provided several themes that will be important to the construction of a financial model-template of online education programs. The first, and most important, is that practitioners in higher education need the information that would be provided by a detailed financial analysis of an online program. Currently that information is not available. The absence of such information demonstrates that information about the costs of operating an online education program is needed, and thus supports the relevance for research such as that proposed in this study.

Secondly, the application of Business strategy, theory, and methodology to problems in Education is a practice that has precedence in past research. While there is little evidence at present that financial modeling for online education has been done in any significant way, the utilization of market analysis, e-commerce strategies, and financial analysis tools such as return

on investment in online education provides significant evidence of the validity of Business theories applied to Education research.

Finally, the literature provides information about how to construct a financial model-template of online education. From discussions of the market forces in play in the industry to explanations of how new ventures function, the necessary components of a workable financial model-template have been detailed in the literature. The Business and Education literature specifically provides a base of cost categories that may be incorporated into the model-template, including: technology, skilled employees (Elloumi, 2004; Howell, Williams, & Lindsay, 2003; de Freitas & Oliver, 2005), the instructor's salary and benefits; the number of courses taught by the instructor; and the costs of course development, course materials, administrative support, classroom overhead, any additional time the instructor spent on the course for activities such as grading and meeting with students, equipment costs, course development costs and the amount of multimedia included in the course (Whalen & Wright, 1999), technical and pedagogical support, additional training (de Freitas & Oliver, 2005). There are also multiple revenue categories specified, with tuition being the largest, but also including government funding; sales of in-house-developed products, design tools, and databases; and provision of other services to students (Elloumi, 2004). Complimenting the cost and revenue categories highlighted in the literature are financial analysis measures that can be applied to online education environments such as return on investment (Whalen & Wright, 1999; Singh, 2003) and breakeven analysis (Whalen & Wright, 1999)

By combining the information contained in the relevant literature, the OPERA model can be constructed, addressing new data, while using proven methodologies. The OPERA model

will utilize cost categories drawn from the Education literature and a model-template structure drawn from the Business literature.

Limitations of the Study

Because every online degree program is unique, as are the organizations behind them, there will be limited transferability of the quantitative data generated by this study. Also, as a non-profit state organization data gathered from the RODP will likely not be transferable to for-profit programs.

The use of a single program as the data source will not offer an opportunity for comparison between data sets. As future research prepares financial models of other programs those programs' results can be compared with the OPERA model to further define the expected shape of a model-template.

Probably the largest limitation of the study is the lack of detailed and explanatory data. In particular, the lack of a concise definition of how the RODP calculated instructional cost limits the accuracy and applicability of the study. While the OPERA model is a first step towards a comprehensive financial model of online education costs researchers should be aware that the OPERA model is only a first step, and further development will improve the OPERA model's accuracy.

The other major limitation of the study, coupled closely with the first, is that of data substitution. Because detailed cost data was not available from the RODP for the first year of the RODP's operations data from the Ohio eCommunity Schools startup report was used as a

substitute. This substitution is the best available option given the available data, but certainly limits the accuracy of the study.

CHAPTER III

METHODOLOGY

Purpose

The purpose of this study is to research current information about online degree program costs and apply Business and Education theories to the existing knowledge to develop a model that can be used as a template to predict the critical cost factors involved in developing and administering an online program of study in higher education. This template is called the OPERA model. The OPERA model serves to provide decision makers in the field of online education with information on which to base their decisions regarding online educational ventures, as well as providing a base from which future researchers may examine the cost structure of other programs.

Methodology

This study began by collecting data from a currently operating online degree program, the RODP, and the Ohio eCommunity Schools reports. The data were analyzed using Business and Education theory that addresses financial modeling and online program analysis. Based on the analysis, the methodology of this study was the design and testing of a financial model delineating meaningful cost categories and categorical percentages of total cost per year of operations.

Data Sources

There are two sources of data for this study. One source is the Regents' Online Degree Program (RODP) operated cooperatively by the institutions of the Tennessee Board of Regents

(TBR). The second source is data from past studies on the online K-12 education program in the state of Ohio. To date, Ohio's online K-12 program has the most detailed and fully developed financial analysis of any public online education venture. Ohio's analysis served as an informational source for online education cost categories in combination with the RODP data on which the OPERA model was based. Ultimately, the OPERA model may serve as a starting point for administrators of online education programs at any level to propose a plan for their unique financial context.

TBR is composed of six universities and thirteen community colleges located throughout the state of Tennessee. The RODP is an online degree program that was launched by TBR in 2001 offering five degree programs. Since 2001 the RODP has grown to eighteen certificate and diploma programs, eight associate degrees, six bachelor degrees, and three master degrees as of July of 2008. The RODP, as a division of TBR, utilizes contributions from multiple campuses for their academic catalog. Each student chooses a home campus which will house that student's advisor and from which the student will officially graduate, but the courses offered by the RODP may originate from any campus in the system.

The RODP was chosen by the researcher as a focus for study because of the program's size and length of operation. The system has been in operation for over seven years and has expanded to include a wide variety of programs. This length of operations and breadth of coverage provide a large volume of cost, revenue, and enrollment data over time from which to construct the OPERA model.

In addition to the RODP's operations the program's state affiliation is important to the data collection. As a division of the state government the RODP's records are by state law

publicly accessible to state citizens. These records may be requested through the state of Tennessee's Office of Open Records.

Ohio's ecommunity schools were launched in 2000 and by 2005 there were 44 schools serving a total student population of 16,909 students. The Ohio system undertook two in-depth financial studies of their system, the first focusing exclusively on the start-up costs and the second focusing on the operating costs of the system. These reports provide extensive details on the amounts of funding and allocation of funds by category.

These two data sources, the RODP and Ohio's system, were chosen to provide a comprehensive picture of online education program costs from which the OPERA model can be constructed. Both systems are public school systems and they were launched within one year of each other. These similarities yielded complimentary data sets that provided valuable inputs into the construction of the OPERA model.

Data Collection

The RODP's operating costs, enrollment, and revenue data were obtained from TBR by filing a request with the state of Tennessee's Office of Open Records. The request was filed in writing and, by state law, received a response from the state of Tennessee within five working days. These data were obtained for the RODP's operating lifetime, beginning with data for the fall semester of 2001 and ending with data for the summer semester of 2008.

The data from the RODP were combined with information contained in two reports, The Operating Cost of Ohio's eCommunity Schools (Pavelka, Osae-Kwapong, Timko, & Marshall, 2005), which is regarded as the most comprehensive study of online program costs to date

(Watson, 2007), and its predecessor, Startup Costs of Ohio's eCommunity Schools (Woolard, Broh, Pavelka, & Timko, 2004). The Ohio studies are freely available for download from public websites and were obtained from those sites. The cost categories of the Ohio studies were used in conjunction with the financial and enrollment data from the RODP to develop a list of common cost categories.

Data Analysis

The data analysis began with the RODP's cost, revenue, and enrollment data. Costs by category, total costs, total revenues, and total enrollment were calculated for each fiscal year. The fiscal year is defined as July 1st of the beginning calendar year to June 30th of the following calendar year. The analysis began with the 2001-2002 fiscal year and ended with the 2007-2008 fiscal year.

The cost and revenue data were entered into a table beginning with revenues, following with all costs, and ending with a calculated net difference between total revenues and total costs for each fiscal year. This table was constructed much like a standard Income Statement from Business practice. After tabulation, the actual dollar amounts of the costs for each fiscal year were converted to a percentage of total cost for that year. This practice, referred to as common size analysis, defines costs and revenues as percentages instead of dollar amounts so that the information may be applied to other organizations at other times without the need to convert the dollar amounts to account for differences in the size of the organization or currency inflation over time. The results of the common size analysis are presented in a table and identified by the year of operation for the RODP.

The total dollar cost for each fiscal year was divided by each fiscal year's total enrollment to calculate a cost per student for each fiscal year. The total dollar cost for each fiscal year was also divided by the total credit hours delivered for each fiscal year to calculate a cost per credit hour for each fiscal year. These calculations and their results will be presented in a table and identified by the year of operation for the RODP.

The Ohio reports were used to help categorize costs. Cost categories from the Ohio reports were compared to cost categories in the RODP data. Unique cost categories in the RODP were grouped in general categories to make the OPERA model more easily adapted by other organizations. This was accomplished by assigning unique costs to related categories; for instance, assigning a line item cost of compensation for a specific group of employees to the overall compensation cost category. Using the calculations performed on the RODP data, the percentages by combined categories were calculated for each fiscal year and assembled in a table and identified by the year of operation for the RODP.

Delimitations of the Study

Introduction

The analysis provided information about the financial functions of a non-profit online degree program for multiple years of the program's operation in order to provide insight into the design, launch, growth, and operation of such a program. Because the final analysis of the RODP reports costs by category as percentages of total cost per year, the OPERA model may serve as a base for creating models of other programs. With similarities across institutions in the cost categories of online degree programs, an understanding of which categories demand the

highest percentage investment of resources at each phase of implementation in the online degree program's operation can provide other programs, regardless of size, with a map of how and when to allocate their online degree investments.

Creation of the OPERA Model

The OPERA model consists of a set of tables showing the percentage of total expenses, by category and year of operation, for the RODP. There are also figures showing the per-student and per-credit-hour expenses by year of operation. These tables and figures are designed so that an online program can input their projected total expenses and use the percentage measures to forecast their actual expenditures by category, per student, and per credit hour over time.

The final output of the study is a template, consisting of percentage of total costs, per category, per year of operation over the seven years of operation for the RODP. This template will provide organizations considering an online education program the opportunity to calculate their costs, by category, based on their total expected costs.

Application of the OPERA Model

Using the OPERA model an organization will be able to enter their projected total cost per year for their online education program and calculate the actual dollar amounts they have available for each category. This will provide organizations with information about not only how much money they should expect to invest in each category of an online degree program, but also whether or not their current total cost level will be sufficient to fund each category of the program.

The final template includes a detailed explanation of what comprises each cost category.

Cost categories are broad, such as technology or staffing, but the individual components comprising each category are specified. For example, the technology category is comprised of components such as servers, the course management system, and online library resources.

Testing the OPERA Model

Testing of the OPERA model will occur as a part of the model's application. When other organizations compare their own historical financial data from online degree programs to the cost categories and percentage costs of the OPERA model, information will be generated regarding the OPERA model's accuracy in predicting the costs of online degree program operation. Organizations planning to offer an online degree program will also be part of testing the OPERA model as they will be able to input their estimated total costs into the model, create a budget, and over time compare the actual results of their operations to the predictions made by the OPERA model.

Conclusion

While further study will be required to develop more detailed financial models of online higher education programs, this research study should provide the groundwork and basic structure for the financial analysis of online degree programs in the non-profit sector. The primary contribution of this research study to the continuing study of online education costs will likely be the connection of Business analysis methods to the financial modeling of educational endeavors along with the identification of cost categories for online degree programs.

CHAPTER IV

RESULTS

Results of Data Collection

The RODP data included detailed enrollment, credit hour, revenue, and instructional cost for every semester of RODP operations, beginning in the fall semester of 2001. Beginning with the 2004-2005 fiscal year there were also detailed cost statements by category for each year. The Ohio eCommunity Schools data came from two reports, Startup Costs of Ohio's eCommunity Schools from 2001 and The Operating Cost of Ohio's eCommunity Schools from 2005. These reports both provided detailed cost and funding information for the eCommunity Schools project both by school and system-wide.

Data Analysis Process

The process of analyzing the collected data was more difficult than expected. The RODP program data, while organized by year, by institution, or by some other method, were not particularly usable in their original form for the construction of a financial model. The methodology involved in transforming these data as received into usable information for the OPERA model proved to be interesting and may be of value to future researchers.

The RODP data included a series of worksheets that detailed the revenue generated by each campus, categorized by the campus offering the course and the home campus of the student taking the course. These data were presented for each semester, spring, summer, and fall, for fiscal years 2001-2002 through 2007-2008, along with detailed totals by campus, by home institution, and calculations of how much of the revenue was allocated to the campus, how much went to the RODP or TBR, and how much went to instructional costs. This level of detail can be very beneficial for purposes of allocating revenues to individual campuses based on the

distribution policy of the RODP, but the data are not particularly helpful in constructing a financial model of the online program as a whole. Also, instructional costs were not defined beyond the quantitative measure of what instructional cost was for each term; nowhere in the RODP documentation was instructional cost defined in terms of what comprised the cost or how the cost was calculated. In the OPERA model instructional cost is used as an aggregate due to a lack of specificity in the RODP data about exactly what activities and contributing costs constitute their single cost category of instructional cost. In the financial data from the RODP instructional cost is listed as a single total cost category for each semester; instructional cost is neither defined nor calculated. Because the only information available in the RODP data is an aggregate number the OPERA model has only that aggregate with which to work. This aggregation may complicate the transferability of the OPERA model.

The very scale of the documents made the information difficult to deal with, and compounding the issue was the fact that data were only available in hard copy, so everything had to be transcribed into a spreadsheet. In order to perform the transcription of the data from paper form to electronic form the original documents had to be copied and enlarged to make the numbers readable. As a part of transcription the data entry on the spreadsheet had to be confirmed with the original hard copy data, and this process took a considerable amount of time, approximately sixteen hours.

In order to make these data usable it was necessary to take the overall totals for each semester and combine them to calculate an annual total. The annualizing of the data was necessary because while these data were presented by semester, other data were presented

annually. To create a cohesive model a common measure must be established, so all data were annualized.

Enrollment and credit data by semester for the fiscal years 2001-2002 through 2007-2008 were also provided. This information was listed by school and by semester. The totals were calculated for the four year and two year schools in the TBR system separately. Again, to be useful for the construction of the OPERA model these figures had to be totaled for the system as a whole and also annualized.

The RODP data also included annual budgeted costs for the fiscal years 2004-2005 through 2007-2008. These budget data were not available for the first three years of operations. The missing data posed some problems for the data analysis. The lack of detailed budgeted costs for the first year of operations required that a substitution be made to complete the OPERA model. Similarly, the lack of detailed budgeted costs for the second and third years of operations required data to be substituted to complete the OPERA model. The absence of detailed cost data greatly complicated the construction of the OPERA model. To construct the OPERA model it was necessary to perform some data substitution in place of missing data from the RODP.

For year one, data from the Ohio eCommunity Schools startup report were used in place of data from the RODP. This substitution was made in the belief that the expenses associated with starting a new online program will likely be equivalent regardless of the academic level at which the launch takes place. By expressing the Ohio eCommunity Schools startup costs as percentages of total annual cost, these measures were compatible with the measures from the RODP. Substituting data for years two and three was more difficult. Because the Ohio eCommunity Schools program did not perform a second assessment until their sixth year of

operations, the Ohio studies did not provide a viable set of substitute data for years two and three of the RODP. While the RODP data did include total cost, revenue, and enrollment data for years one through three, the changes in these aggregates were not appropriate for plotting a straight-line trend for costing. As seen in the literature, the first year of operations for an organization often has very different resource requirements than continuing operations. In order to fill in the gaps in data for the OPERA model the data from year four were carried back to fill in years two and three. This use of year four data to substitute for missing year two and three data impacts the level of detail for the OPERA model, but it was the best alternative available given the absence of data from the RODP.

The final complication to the RODP data was the lack of specificity in defining instructional cost. It was unclear from the RODP documents whether instructional cost as reported in the 2001-2002 through 2007-2008 revenue and cost documents was a stand-alone cost or whether the RODP's definition of instructional cost was a combination of other cost categories. If instructional cost was a combination of cost categories, which cost categories comprised the instructional cost and which were separate was not available. To remedy this issue, instructional costs were included in the model as an independent cost category. If instructional costs had not been included as an independent category then the total calculated cost of the model will be high. This issue, however, is mitigated in application by the fact that the relative impact on total cost of the instructional cost versus the various independent cost categories is still illustrated. The imprecise nature of the original collection and reporting of the data by the RODP poses a problem for the accurate construction of the OPERA model, but for an initial effort the substitutions should be sufficient to guide future efforts.

Quantitative data from all sources were entered into a series of worksheets in Microsoft Excel. Costs from the Ohio reports and the RODP data were assessed and grouped into eight categories: Technology, Administration, Instructional Cost, Course Development, Marketing, Facilities, Student Support, and Administrative Overhead. As explained earlier, the RODP data did not specify what comprised instructional cost, only the quantitative measure of instructional cost was included in these data. For the purposes of this study, based on the available information, instructional cost was considered a component of total cost and included in the calculation of annual total cost.

As explained earlier, detailed budgeted costs were only available for the RODP beginning in the 2004-2005 fiscal year. For the first year of operations, the 2001-2002 fiscal year, data from the Ohio eCommunity Schools startup report were used as a substitute. For the second and third years of operations, fiscal years 2002-2003 and 2003-2004, the data from the RODP's fourth year of operations, fiscal year 2004-2005, were substituted. Table 1 shows which data were used as an information source for each year of operations.

Fiscal Year	Data Source
2001-2002	Ohio eCommunity Schools Startup Report
2002-2003	Budget Data from RODP FY 2004-2005
2003-2004	Budget Data from RODP FY 2004-2005
2004-2005	Budget Data from RODP FY 2004-2005
2005-2006	Budget Data from RODP FY 2005-2006
2006-2007	Budget Data from RODP FY 2006-2007
2007-2008	Budget Data from RODP FY 2007-2008

Table 1

Data Sources by Year

The lack of detailed budget data for the RODP also required the substitution of data categories for the first three years of the RODP's operations. Because the first year's financial data were drawn from the Ohio eCommunity Schools Startup Report the data categories for this first year were carried through the following two years of operations as well, fiscal years 2002-2003 and 2003-2004. To indicate this, Tables 2 through 9 show what costs were grouped into which categories by year. Fiscal years 2001-2002 through 2003-2004 are grouped as a single column. Following this first column there are individual columns for each of the fiscal years from 2004-2005 through 2007-2008 to show the changing cost categories included in the RODP's detailed budget data.

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Technology Cost Components	Technology	UOM Hosting Contract, WebCT Training License, Equipment, Software, Software Licenses, WebCT Pilot Programs	UOM Hosting Contract, WebCT Training License, Equipment, Software, Software Licenses, WebCT Pilot Programs	UOM Hosting Contract, Equipment, Software Licenses, ROCE WebCT License Agreement, Transfer to R&R for new CMS Contract, Banner modifications – RODP SIS	D2L CMS and hosting contract, UOM Tier II Help Desk Contract, Virtual Hospital – MSN Program, Equipment, Software, Licenses, E- Learning Campus Support/D2L Support,

	System, E-learning Campus support – NEW line item for 2006-2007	Technology Innovations
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Table 2

Technology Cost Category Components by Fiscal Year

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Administration Cost Components	Administration, Education Management Association	Personnel Cost, Benefits, Dual services contracts, RODP mentors	Personnel Cost, Benefits, Dual services contracts, RODP mentors	Personnel Cost, Benefits, Dual services contracts, RODP mentors	Personnel Cost, Benefits, Dual services contracts, RODP mentors

Table 3

Administration Cost Category Components by Fiscal Year

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Instructional Cost Cost Components	Instructional Cost	Total Instructional Cost	Total Instructional Cost	Total Instructional Cost	Total Instructional Cost

Table 4

Instructional Cost Cost Category Components by Fiscal Year

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Course Development Cost Components	Course Development	Course Development	Course Development	Course Development, Instructional Design Center –	Course Development, Instructional Design Center –

				Quality Matters	Quality Matters
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Table 5

Course Development Cost Category Components by Fiscal Year

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Marketing Cost Components	Marketing, Sponsorship	Marketing	Marketing	Marketing	Marketing

Table 6

Marketing Cost Category Components by Fiscal Year

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Facilities	Facilities	Facility Cost	Facility Cost	Facility Cost	Facility Cost

Cost
Components

Table 7

Facilities Cost Category Components by Fiscal Year

Fiscal Year	2001-2002, 2002-2003, and 2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Student Support	Student Support	Smarthinking	Smarthinking	Smarthinking	Smarthinking
Cost		Online Tutoring	Online Tutoring	Online Tutoring	Online Tutoring
Components		Labs, Library resources	Labs, Library resources	Labs, Library resources	Labs, Library resources

Table 8

Student Support Cost Category Components by Fiscal Year

Fiscal Year	2001-2002,	2004-2005	2005-2006	2006-2007	2007-2008
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2002-2003, and

2003-2004

Administrative Overhead Cost Components	Equipment and Supplies, Compliance and Accountability, Other	Contracted Services, 3-yr Plan, Supplies and Materials, Mileage, Training, and Travel, RODP Evaluations, MERLOT (Nashville Host City), MERLOT Annual (Nashville Host City), E-learning Academies, RODP Meetings, Forums, Conferences, and Training, RALI	Supplies and Materials, Mileage, Training, and Travel, RODP Evaluations, MERLOT (Nashville Host City), MERLOT Annual Membership Fee, E-learning Academies, RODP Meetings, Forums, Conferences, and Conferences, and Training, NROC	Supplies and Materials, Mileage, Training, and Travel, ETSU Assessment and Evaluation Contract, MERLOT Annual Membership Fee, E-learning Academies, RODP Meetings, Forums, Conferences and Training, NROC	ETSU Assessment and Evaluations Contract, Supplies and Materials, Mileage, Training, and Travel, D2L Conference – Staff and Faculty Mentors, MERLOT Annual Membership Fee, MSN Fees and Memberships (AACN, NLN, TN Directors,
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(Regents	Training	Agreement,	NLNAC, Etc.),
Academic		RALO Annual	IMS Global
Leadership		Budget Account	Learning
Institute) –		(Seminar	Consortium Inc.,
leadership		Expenses – Food,	SREB-SCORE
academy		Travel, Hotel,	Membership,
		etc.) – Transferred	ETSU E-learning
		to RALO Account	research, NROC
		7/06, IT Office,	Agreement
		Academic Affairs	(Monterey
		Office	Institute for
		(Transferred to	Technology and
		AA Acct. in 7/06),	Education), E-
		MSN Fees and	learning
		Memberships	Academies,

	(AACN, NLN, TN Directors, NLNAC)	RALO Annual Budget Amount (Seminar Expenses- Food, Hotel, Travel, etc.), RODP Meetings, Forums, Conferences, and Training, Academic Affairs Office (Transferred to AA Acct. in 7/06)
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Table 9

Administrative Overhead Cost Category Components by Fiscal Year

Each year of operations reported by the RODP included different cost categories. The grouping of these specific categories into broad categories was done to provide a concise representation of where costs were concentrated.

Summary Overview of the OPERA Model

As illustrated in Tables 2 through 9 the OPERA model was constructed with eight broad categories: technology, administration, instructional cost, course development, marketing, facilities, student support, and administrative overhead. Over the seven years of operation for the RODP technology, instructional cost, and facilities were a decreasing percentage of total cost while administration, student support, and administrative overhead were an increasing percentage of total cost. Marketing costs varied as a percentage of total cost, showing increases and decreases over the operating life of the RODP.

Some important points that were revealed by the study concerned technology costs and the cost of instructional cost and student support. Technology costs were a much higher percentage of total cost for year one than for continuing operations. There was also a large spike in the cost of technology as a percentage of total cost in year six of the RODP's operations. This spike was due to a large investment in making technology changes at that time, and highlights the need for contingency funds to be available for such incremental changes.

The NACUBO study reported the combination of instructional cost and student support as approximately 85% of the total cost of traditional undergraduate education. This study showed annual instructional cost and student support as approximately 60-65% of total cost.

This difference of 20% or more per year indicates that there are different cost allocations for online versus traditional higher education delivery formats.

The final OPERA model is a table showing percentage of total cost, by category, by year of operations for an online degree program. This information is designed to be used as a guide with which other higher education institutions may plan for and assess their own online degree programs. Like the NACUBO study, the OPERA model is broad and intended to provide a structure and guide for financial planning by higher education institutions.

Analysis of Costs by Category

Technology

The Ohio reports indicated a larger investment in technology in year one than during continuing operations. While a detailed breakdown of technology expenditures was not available, the report did specify that the majority of the technology expenditure went towards hardware and software. When initial purchases of servers, bandwidth, and software are considered it is logical to conclude that first year technology expenses will be much higher than for continuing operations. The RODP shows a spike in technology expense, both in dollars and in percentage of total cost, for the 2006-2007 fiscal year, the sixth year of operation for the RODP. This is not a change in the cost of continuing operations, but rather a large expenditure to change course management systems and make changes to the organization's accounting management system. These charges are seen as categories in the overall Technology category for 2006-2007 as "Transfer to R&R for new CMS Contract", reported as 5.88% of total cost for the year, and "Banner modifications", reported as 5.29% of the total cost for the year. While changes of this scale and scope can probably not be set to occur in any given year in a template

such as OPERA, it is reasonable to assume that for any organization technology changes such as this will occur over time, and as such, provision should be made to prepare for periodic large technology expenditures as conditions dictate. Figure 1 shows technology cost as a percentage of total cost by fiscal year.

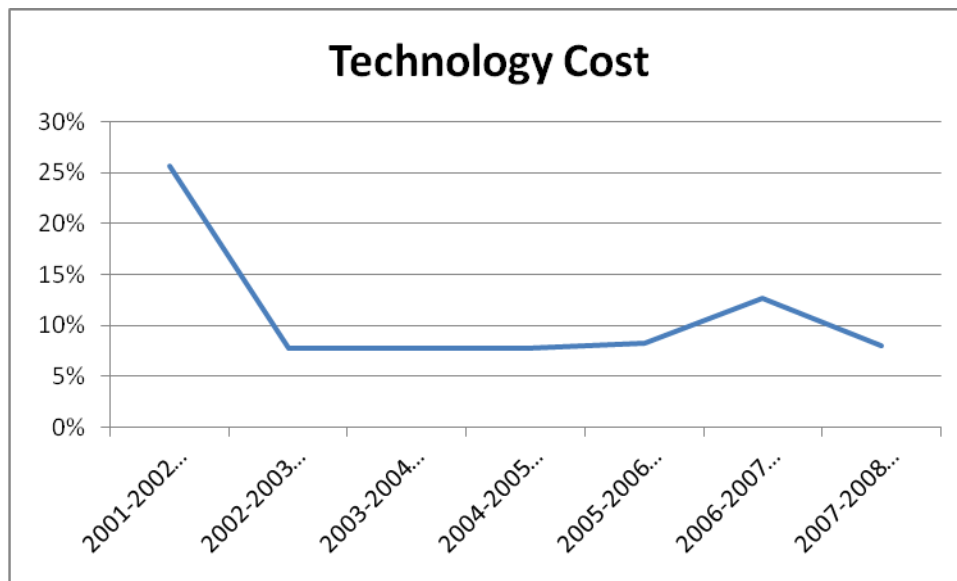


Figure 1

Technology Cost as a Percentage of Total Cost

Administration

The Ohio reports indicated a very large increase in administration costs between the first year and the continuing operations of the program. Given that as an online education program expands it demands more planning and oversight this increase in administrative expense is reasonable. The detailed RODP data indicated a slight upward trend of administrative expense as a percentage of total cost from fiscal year 2004-2005 through 2007-2008, but with the rapid expansion demonstrated by RODP that increase would seem to be reasonable to support program

growth. Figure 2 shows the percentage changes in enrollment versus administration cost by fiscal year.

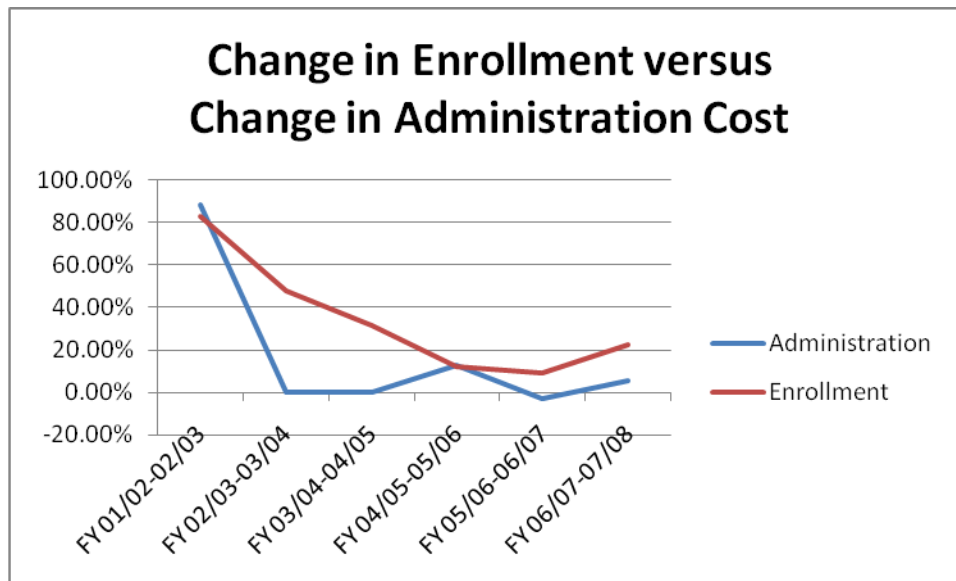


Figure 2

Percentage Change in Enrollment versus Percentage Change in Administration Cost

Instructional Cost

Instructional cost is a large portion of the total cost of each year of operations, approaching or above 60% of the total cost. Even when including student support costs of 2.28% to 3.85% of total annual cost, this total is much lower than the approximately 85% cost for instructional and student support costs indicated in the NACUBO model for traditional higher education. This difference, over 20% of the total annual cost, is distributed to other cost categories in online education where in traditional education it is absorbed in instructional and student support costs.

There is a downward trend in instructional cost as a percentage of total cost from the 2002-2003 to the 2007-2008 fiscal year. Speculating as to the possible reasons behind this trend

is beyond the scope of this research, but these data do raise interesting questions for future researchers and provides a useful trend to apply to budgeting over time for an online degree program. Figure 3 shows instructional cost as a percentage of total cost by fiscal year.

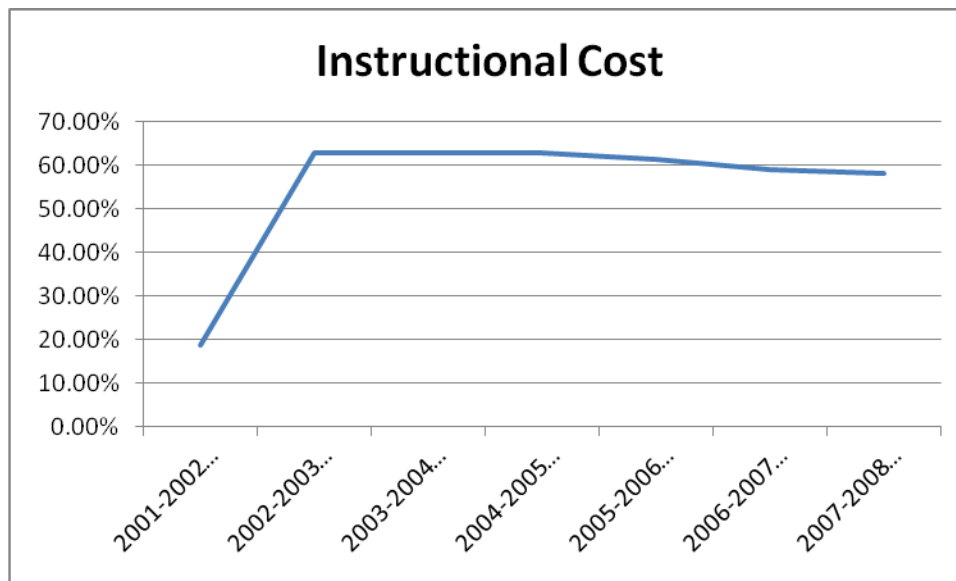


Figure 3

Instructional Cost as a Percentage of Total Cost

Instructional Cost per Student and per Credit

The instructional cost per student and per credit by fiscal year is the only category in which real dollars are presented. The dollar cost measures for per student and per credit cost are likely more useful, and more relevant, than percentage of total cost measures. Figure 4 displays the dollar cost per student and dollar cost per credit, by fiscal year, for the RODP.

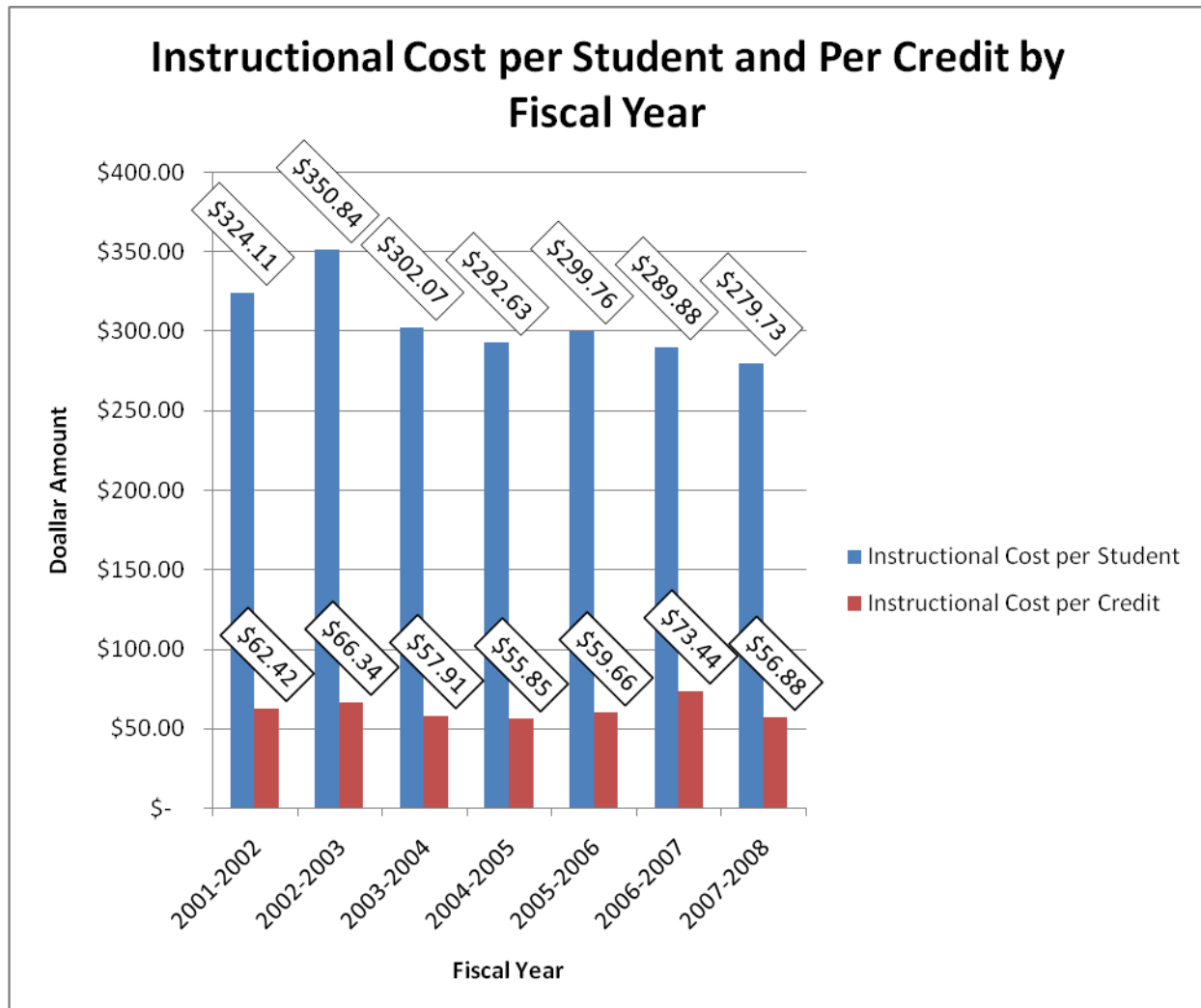


Figure 4

Dollar Cost per Student and per Credit by Fiscal Year

Course Development

The Ohio program provides cost information for their curriculum start-up expenditures. These costs vary among institutions participating in the eCommunity Schools program, based on some schools paying a full up-front fee for a curriculum developed by a management company and other schools paying for a curriculum developed by a management company through a

monthly installment plan. In either case, the Ohio eCommunity Schools course development costs consisted of purchasing curriculums designed by third party providers. The RODP defines course development as simply a budget line item with no further explanation, although the course development category as used in the OPERA model includes the RODP's addition of an instructional design center in fiscal years 2006-2007 and 2007-2008. For course development there is a sizeable drop in percentage of total cost from the 2005-2006 fiscal year to the 2006-2007 fiscal year, followed by an even larger increase from the 2006-2007 fiscal year to the 2007-2008 fiscal year. 2007-2008 saw the launch of a new Master's degree program, the Master of Professional Studies degree, which could in part explain the increased cost of course development in preparation for the new program. While detailed information on the timeline of programming offerings is not available, the likely explanation for the low 2006-2007 cost of course development is that few, if any, new programs were offered at that time, thus reducing the amount of necessary course development activities. Figure 5 shows the percentage change in course development cost versus the percentage change in credit hours delivered by fiscal year.

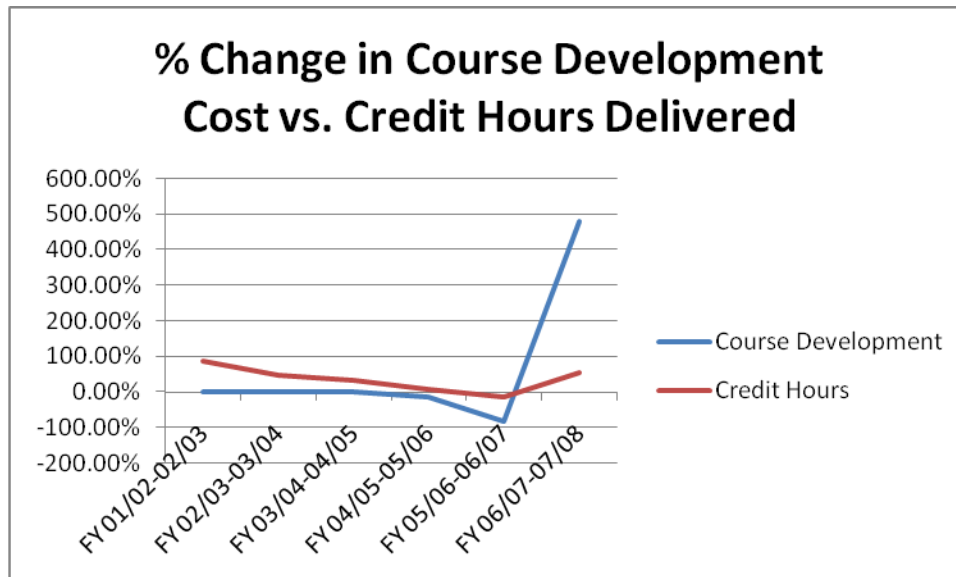


Figure 5

Percentage Change in Course Development Cost versus Percentage Change in Credit Hours Delivered

Marketing

The Ohio program defines marketing expenses as a variety of expenses for different schools in the eCommunity Schools program, varying from just providing parent information sessions to advertising and market research. The specific costs of the efforts undertaken as part of the marketing cost category were not available. The RODP defines marketing costs as going towards CDs, brochures, billboards, and et cetera, but there is no breakdown of how much was spent on each category of marketing, simply an overall marketing cost. Marketing costs show an overall upward trend over the RODP's seven years of operations. This would seem reasonable as the increasing size of the RODP will achieve some economies of scale while marketing efforts would need to be bolstered in order to maintain growth. Other organizations pursuing online

degree programs should be prepared to face increasing marketing expenses to deliver their messages to potential students.

Note that as enrollment changes were decreasing the marketing expenses also decreased. Following this decrease, in the 2006-2007 fiscal year marketing and enrollment both showed positive changes. There may be a relation between dollars spent on marketing and increased enrollment. Figure 6 shows the percentage change in enrollment versus percentage change in marketing cost.

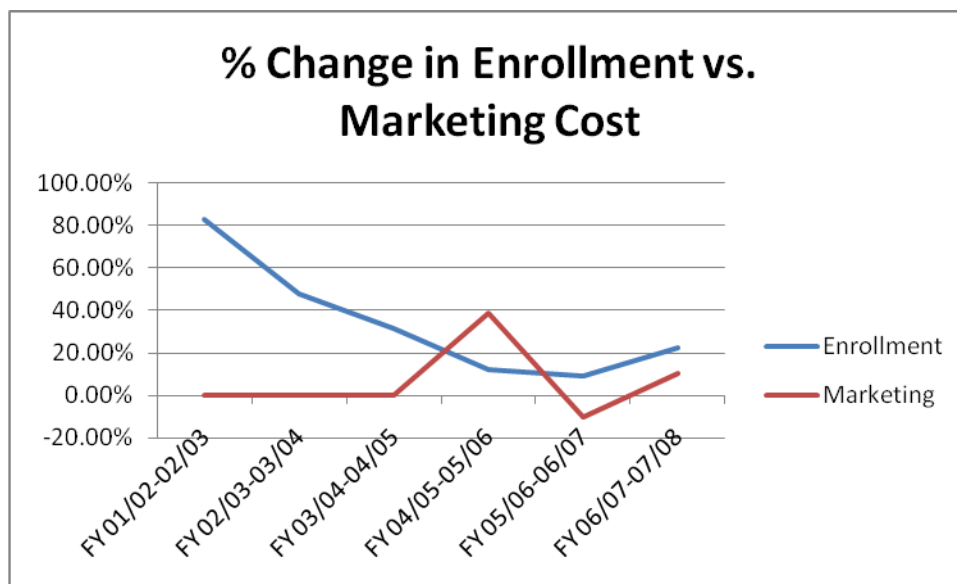


Figure 6

Percentage Change in Enrollment versus Percentage Change in Marketing Cost

Facilities

Facility costs of the RODP actually show a downward trend from the 2004-2005 to the 2007-2008 fiscal years. This may be explained by the fact that the physical facilities for the administration of an online degree program may not need to change significantly over time, even with an expanded program. While new courses and new degrees certainly demand new

resources, those resources likely are more concentrated in instructional and development areas than in administration. As a result of this, the increasing expenditures on other items leaves facilities as a smaller portion of the total cost of the program, even with increasing real dollar cost of facilities. Figure 7 shows facilities costs as a percentage of total cost by fiscal year.



Figure 7

Facilities Cost as a Percentage of Total Cost by Fiscal Year

Student Support

Student support shows an overall upward trend from the 2004-2005 to the 2007-2008 fiscal year. The student support category includes the RODP's costs for Smarthinking online tutoring labs and library resources. While the actual dollar cost would be expected to increase with the number of students the percentage of total cost is also increasing, indicating that relatively more dollars are being spent per student for support over time. This phenomenon may be due to the increasing enrollment in the online degree program, not simply in numbers of students, but more importantly in numbers of students who have not previously studied online or

have been away from education for a longer period of time and therefore need more support than early adopters of online education.

Because detailed dollar cost data are not available until the RODP's 2004-2005 fiscal year there is no trend data for 2001-2004. The upward trend of support dollars per student over the 2004-2005 to the 2006-2007 year is followed by a decrease in the 2007-2008 year. A possible explanation for this may be that while enrollment again increased there were new graduate programs added to RODP's offerings and graduate students often demand less support than undergraduates. Figure 8 shows student support dollars spent per student enrolled by fiscal year.

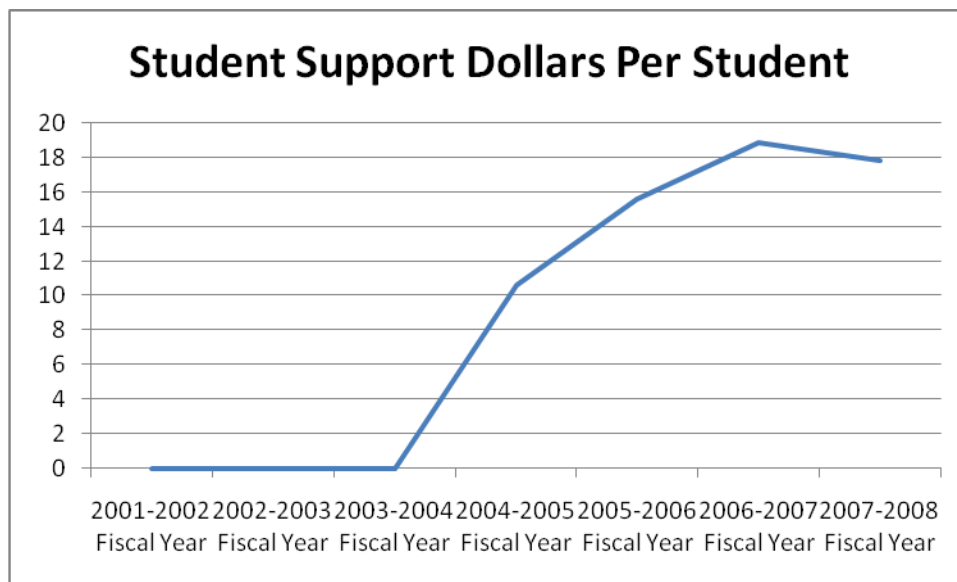


Figure 8

Student Support Dollars per Student by Fiscal Year

Administrative Overhead

Administrative overhead also shows an increasing percentage of total cost from the 2004-2005 to the 2007-2008 fiscal year, although there is a dip for the 2005-2006 fiscal year. Because

so many disparate costs are part of the overhead category it is difficult to say exactly what the cause is for the increasing percentage cost of administrative overhead. Partly this is due to the fact that from year to year there are different costs included in the category. Based on the data, the most likely explanation is that as RODP expands it bears the burden of carrying memberships in more organizations to support the related academic programs. As the overall cost of professional and institutional memberships grows, so does the overall administrative overhead, both in dollar value and as a percentage of the total cost.

Trend Changes by Fiscal Year

There are two measures of the size of the academic program offered by the RODP, total enrollment and total credits generated. It is important to examine both of these measures, as they may offer different information. The number of students enrolled in a program may include students enrolled full time, students taking only one class, or any combination in between. Thus, while the number of enrolled students identifies the number of individuals enrolled at some level in the program the credits generated identify how many credit hours the program delivered. Figure 9 shows the percentage change in total enrollment by fiscal year and figure 10 shows the percentage change in total credits generated by fiscal year. A trend line has been added to each figure to indicate the trend over time. Note that while there is a decreasing trend from the 2001-2002 to the 2007-2008 fiscal year, this simply identifies that the size of the increase from year to year is decreasing, not that the volumes of enrollment or credits generated are decreasing.

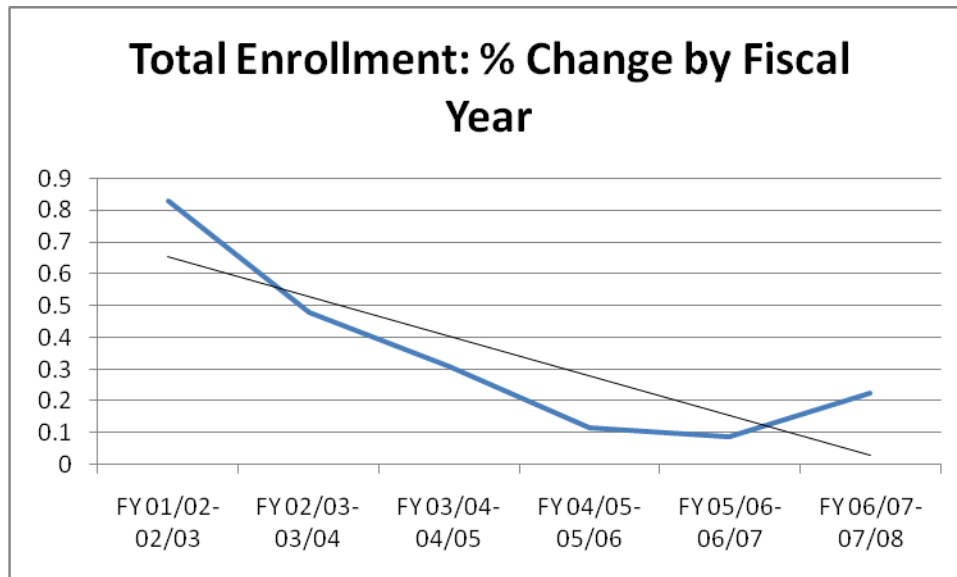


Figure 9

Percentage Change in Total Enrollment by Fiscal Year, with trend line

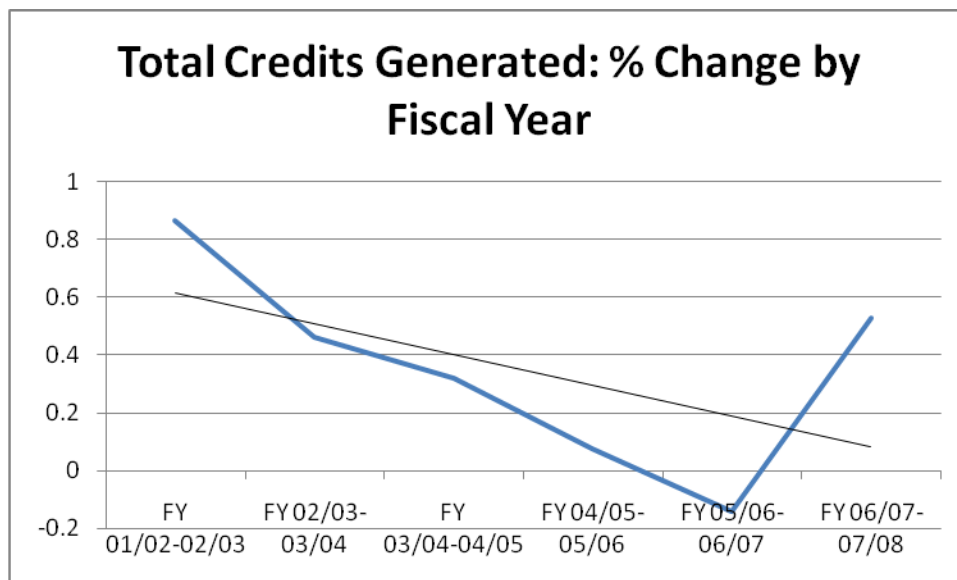


Figure 10

Percentage Change in Total Credits Generated by Fiscal Year, with trend line

The change in total instructional costs for the RODP also shows a downward trend from the 2001-2002 to the 2007-2008 fiscal year. Again, this does not reflect decreasing total costs, but rather that the size of increases from year to year is less for each new year than it was for the previous year. Figure 11 shows the percentage change in total instructional costs by fiscal year and includes a trend line.

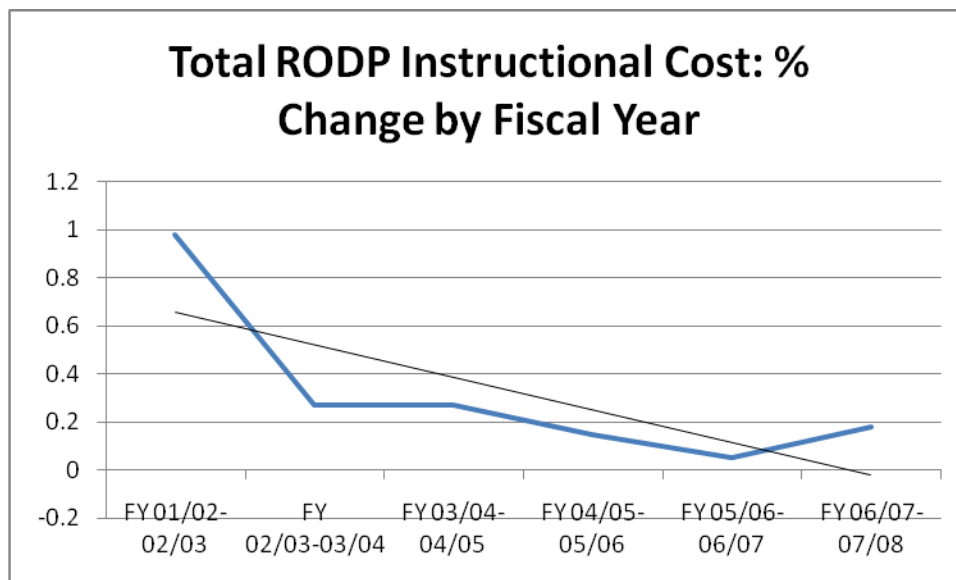


Figure 11

Percentage Change in Total Instructional Costs by Fiscal Year, with trend line

Examining instructional cost per student and instructional cost per credit also reveals a downward trend from the 2001-2002 to the 2007-2008 fiscal year, although these two measures show a more variable year to year difference than the change in total instructional cost. Figure 12 shows the percentage change in instructional cost per student by fiscal year with a trend line and figure 13 shows the percentage change in instructional cost per credit by fiscal year with a trend line.

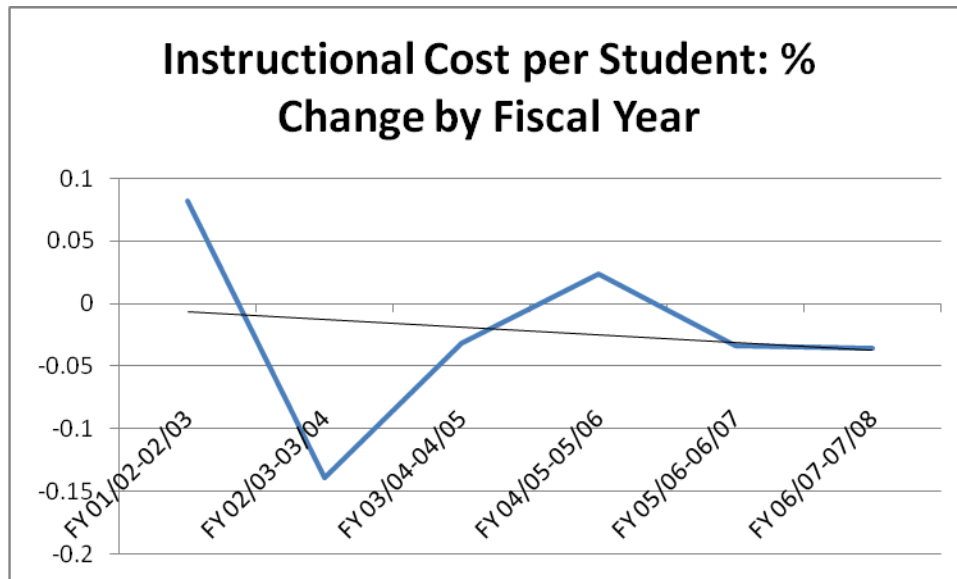


Figure 12

Percentage Change in Instructional Cost per Student by Fiscal Year, with trendline

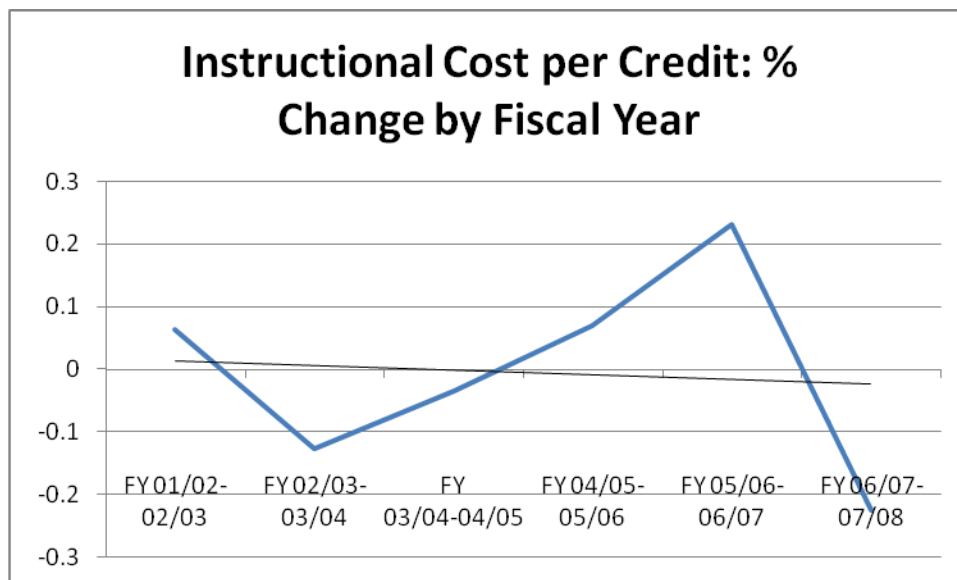


Figure 13

Percentage Change in Instructional Cost per Credit by Fiscal Year, with trendline

Similar to total costs, total revenues for the RODP also show a trend of decreasing percentage changes from one fiscal year to the next, from the 2001-2002 to the 2007-2008 fiscal year. Again, this does not represent negative growth, but the fact that over time the scale of the percentage changes is getting smaller. Figure 14 shows the percentage change in total revenue by fiscal year with a trend line.

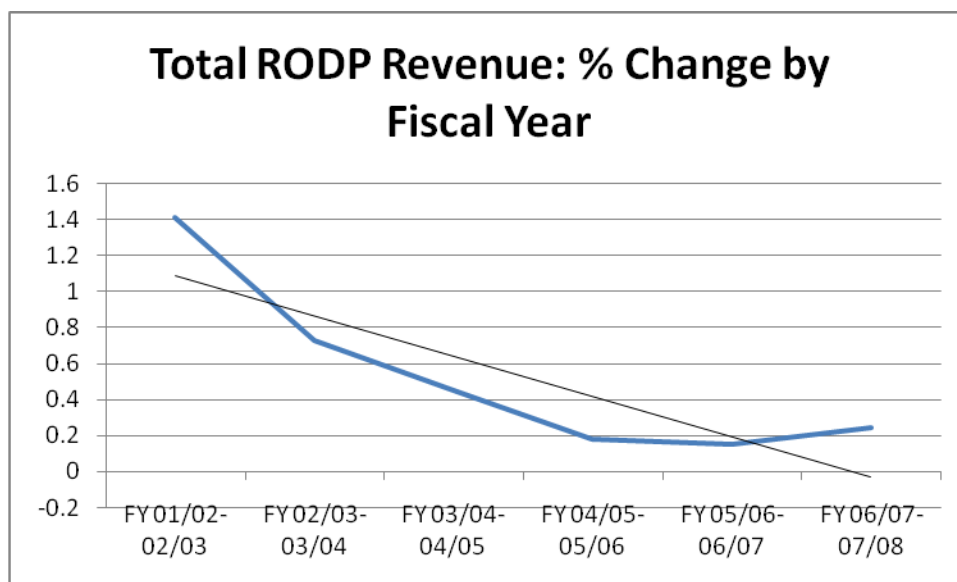


Figure 14

Percentage Change in Total Revenue by Fiscal Year, with trend line

Table 10 displays the percentage of total cost for each cost category for fiscal years 2001-2002 to 2007-2008. Detailed budgeting information from the RODP was available beginning in fiscal year 2004-2005. For the 2001-2002 fiscal year percentages from the Ohio eCommunity Schools Startup report were used to create the OPERA model. For fiscal years 2002-2003 and 2003-2004 the detailed RODP data from 2004-2005 were carried back to fill in the missing information. While an approximation, this extrapolation should serve to provide other

organizations with a base model from which they may financially plan their own online programs.

As shown in table 10, the largest percentage costs for the operation of the RODP are instructional cost and administration, respectively. The instructional cost is a variable cost, that is, it varies depending on the number of students enrolled or number of credits delivered. In relation to revenue, this means that margins may remain relatively flat across different enrollment levels with the largest expenses moving in parallel with revenues generated from credits delivered.

Cost Categories	2001- 2002 Fiscal Year	2002- 2003 Fiscal Year	2003- 2004 Fiscal Year	2004-2005 Fiscal Year	2005-2006 Fiscal Year	2006-2007 Fiscal Year	2007-2008 Fiscal Year
Technology	25.66%	7.71%	7.71%	7.71%	8.21%	12.61%	7.91%
Administration	5.39%	14.15%	14.15%	14.15%	15.89%	15.38%	16.17%
Instructional Cost	24.60%	62.75%	62.75%	62.75%	61.31%	59.04%	58.19%
Course development	16.42%	4.78%	4.78%	4.78%	4.14%	0.76%	4.40%
Marketing	6.96%	2.94%	2.94%	2.94%	4.08%	3.66%	4.04%
Facilities	2.33%	1.96%	1.96%	1.96%	0.72%	0.70%	0.59%
Student Support		2.28%	2.28%	2.28%	3.20%	3.85%	3.71%
Administrative Overhead	18.63%	3.44%	3.44%	3.44%	2.45%	4.00%	5.00%
Total Cost	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 10

Percentage of Total Cost by Category by Fiscal Year

CHAPTER V
CONCLUSIONS

The OPERA Model

Developing the OPERA model was an enlightening process. The primary interests to future researchers will likely be the issues of data access and data format. Data access proved to be a surprisingly difficult issue to overcome. One of the promising factors of using the RODP as a data source was the fact that as a state agency their information is, by law, public record to residents of the state of Tennessee. Accessing the data through the RODP's administrators proved challenging, but filing a request through Tennessee's newly revised open records law resulted in the data being provided. While it is impossible to predict what other researchers may encounter working in other state or private systems it is worth noting that these difficulties were encountered during this research.

Once the enrollment and financial data were acquired, they offered some unique challenges for analysis. Researchers who possess a background in Business disciplines should be aware of the fact that when a state agency is involved the records keeping and financial documentation may not follow the standards that are normally found in Business, specifically the Generally Accepted Accounting Principles (GAAP). When the information from the RODP was received it was not in the form of standardized financial statements such as Income Statements and Balance Sheets. More than anything, the financial records were just spreadsheets of what happened with totals calculated for the different time periods and different categories. While there was valuable information contained in the reports, obtaining that information was more involved than simply performing a standard financial statement analysis as done in the field of Business. Thus, researchers should be prepared to do extensive cleaning and organization of the raw data obtained from public educational organizations before beginning analysis of the

financial system. What may be of interest to future researchers will be to request and analyze the documentation prepared by the RODP for auditing by accrediting bodies. These reports, as opposed to the records obtained by this study, must conform to the standards of the relevant accrediting bodies.

The construction of the OPERA model itself revealed some interesting points. First, different systems are likely to have different cost categories included in their budgets. In the OPERA model the general categories were constructed to provide other organizations with a framework in which they could apply their own unique costs. For a model to be applicable to multiple organizations this generalization is necessary, as particular environments may each have unique specific costs.

The biggest example of this generalization is the cost category of administrative overhead. The inclusion of a variety of costs in the administrative overhead category is a common Business practice, where administrative overhead is used as a device to capture costs that cannot be directly attributed to operations. One concept that applies to this cost division is that of value-added versus non-value-added costs. Value-added costs are costs that directly contribute to the function of the business, or in this case the educational program. Non-value-added costs are costs that are necessary to the operation of the business or the program but do not directly contribute to the function. In the OPERA model, as in other cost models, these non-value-added costs are captured as the administrative overhead category. For the value-added categories, there are also some interesting points revealed in the OPERA model.

As was seen in the 2005-2006 fiscal year with the RODP there are likely to be extraordinary events that impact the overall cost structure of the organization. During the

RODP's 2005-2006 fiscal year their technology costs were extremely high in comparison to other years because of the transition to a new LMS and change in the organizational accounting system. Over time, different extraordinary events are likely to occur in an organization's operations. Extraordinary events do not regularly occur, and as such cannot be specifically included in a plan. A model can capture the fact that these events occur, but no model can place an expected time or magnitude on extraordinary events. The lesson to be learned from this is that organizations must maintain sufficient flexibility, and capitalization, to manage extraordinary cost events when they occur.

An organization would be well-advised to maintain a contingency fund to manage unexpected events. While contingency funding will be important at any stage of an organization's operations the funding is especially important during the start-up phase of the operation. During start-up an organization is more likely to encounter unexpected problems demanding funding that was not originally budgeted. The start-up period is particularly dangerous because a start-up organization does not have past operating experience on which to base decisions. Start-up budgets are made with the best available projections of costs, but the projections are rarely entirely accurate. Based on these operating conditions, an organization should not only have a contingency fund available during ongoing operations but should also include a dedicated cost category for contingency funding in the start-up phase of the operation.

While the purpose of the OPERA model is to provide organizations with a template from which to plan an online education program start or online education program operations it serves to do much more. The variability in both organizations and operations of an organization over

time is illustrated by the OPERA model. This variability and changes over time are factors that must be considered by organizations considering their own entry into online education.

Growth

Much of the literature reflects the unexpected, and very rapid, growth that new online education programs sometimes experience. The OPERA model illustrates this high growth rate for enrollment and course offerings but also shows that after the initial surge the scale of the program growth slows over time. Positive growth still occurs, simply at a slower rate.

Organizations new to online education should keep in mind that they will likely see a spike in demand early in the life of the program. Past that initial spike, however, they are likely to see smaller increases in subsequent years.

The OPERA model illustrated not only the changing scale of growth in enrollment and credits generated but also the associated costs for operating the online education program. As noted in Chapter 4, the largest cost category, instructional costs, is a variable cost. While the percentage change by year of the instructional cost changes, the overall trend is a downward one. Like enrollment and credits generated this large variable cost increases at a decreasing rate over time. The same is true for the other costs of the program, and for revenue. For planners, this means that budgeting efforts should focus on the scale of increases in all aspects of the program over time, particularly the fact that initial high increases will likely not remain steady.

Using the OPERA Model

Having looked at the results of the construction of the OPERA model the next point for consideration is the ways in which the OPERA model may be applied by organizations

considering an entry into online education. The primary purpose of the OPERA model is to provide organizations with a framework from which they can estimate their projected cost to both start and operate an online degree program.

An organization planning to begin offering an online degree program will reasonably have an estimate of their initial enrollment and also a figure for the total cost of the new program. Using the OPERA model an organization can take their projected total cost and multiply it by the percentage of total cost for each cost category. This will yield an estimate of the dollars available to be invested in each cost category for the new online program. The organization can then take the estimated dollars available for each category and compare that figure against the estimated cost to obtain the necessary resources for each category. If available funds for a category do not meet the demand for investment then the organization will have a sign that they need to either increase their investment in the project or, at worst, abandon the project for lack of funds.

Given the lack of a comprehensive fiscal planning model in the literature that can help to guide organizations through the development and implementation of an online degree program, the OPERA model is the first time organizations will have a guide on which to plan their investments in online degree programs. As the OPERA model is used the experiences of organizations using the model as a planning tool can contribute to further refinement and advancement of the OPERA model, thus making it more useful and applicable over time.

Future Research Opportunities

The OPERA model is a beginning to financial modeling of online education operations; the OPERA model provides the first step into a new line of research. The primary focus of future studies should be to analyze the operations of more organizations for the purpose of obtaining a larger volume of data from which to refine the OPERA model. The structure outlined in the OPERA model may be used to begin the refinement, but as more data are obtained and more experiences are added to the model the structure will likely change to more accurately reflect actual operations.

The ideal data collection will consist of a professionally designed program of accounting information being set in place before the launch of a new online degree program. This program would be designed by highly qualified cost accountants and would collect detailed cost data from the planning stages forward for the new online degree program, tabulating data in standard financial statement formats. This formal data collection process would provide detailed information for a more advanced cost model.

As more data are collected from a greater variety of programs it may also be possible to provide a model that offers more detail, versus the more broad categories that were developed as part of the OPERA model. More detailed categories will produce a larger model, but also will help organizations to better predict and understand the costs that are involved in the launch and operation of their online education programs.

Conclusion

The OPERA model is designed as the first step in developing a comprehensive understanding of the costs of online higher education programs. Starting with the OPERA model, it is hoped that future researchers will have the opportunity to gather more detailed data from more sources to enhance, expand, and improve on a financial model of online degree programs. These efforts will serve not only to improve the operations of the educational institutions using the model for planning and assessment purposes, but also students seeking to learn online. As the efficiency of online higher education improves more students will have the opportunity to participate. Ultimately, the product of this study is improved educational opportunities for future students.

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APPENDICES

APPENDIX A

The Extended Traditional University Model

Input	Traditional universities	Extended traditional universities	For-Profit adult-centered universities
Philosophy	Students come to campus	Campus goes to students	Campus and non-campus philosophy
Mission	Mission defined by level of instruction	Externally focused, degree completion and workforce development	Almost exclusively workforce focused
Funding	\$ per full-time student	More self-sustaining and market driven	Market driven, workforce focused, and profit driven
Curricula	Relatively stable & comprehensive curriculum	More flexible curriculum content for workforce competence and development	Focused on workplace needs; adult oriented
Instruction	Most courses are lecture based	Greater variety of methods and use of student experience	Methods typically standardized across locations--greater use of student experience
Faculty	Primarily full-time faculty; academic preparation and credentials,	Greater use of adjuncts with professional experience	Usually staffed with part-time faculty with professional experience
Students	Selectivity at admission	Life and work experience is greater factor in admission	Life and work experience is significant factor in admission
Library	Volumes in library	Access to specific documents and resources appropriate to program	Access to specific documents and resources appropriate to program
Learning Technology	Enhance lecture-oriented instruction	Both lecture oriented and used to extend access	Both lecture oriented and used to extend access
Physical Facilities	Extensive physical plant	Still campus based but less reliance on physical plant	Physical plant is provided in response to market demand
Productivity Outcomes	Student credit hours and degrees.	Student credit hours and degrees	Bottom line is revenue generated compared with expenses--profitability
Governance	Board of Trustees	Board of Trustees	Board of Directors
Accreditation	Institutional by region; individual programs or disciplines are also accredited	Institutional by region as part of parent organization's accreditation; individual programs or disciplines are also accredited	Institutional by region; individual programs or disciplines are also accredited

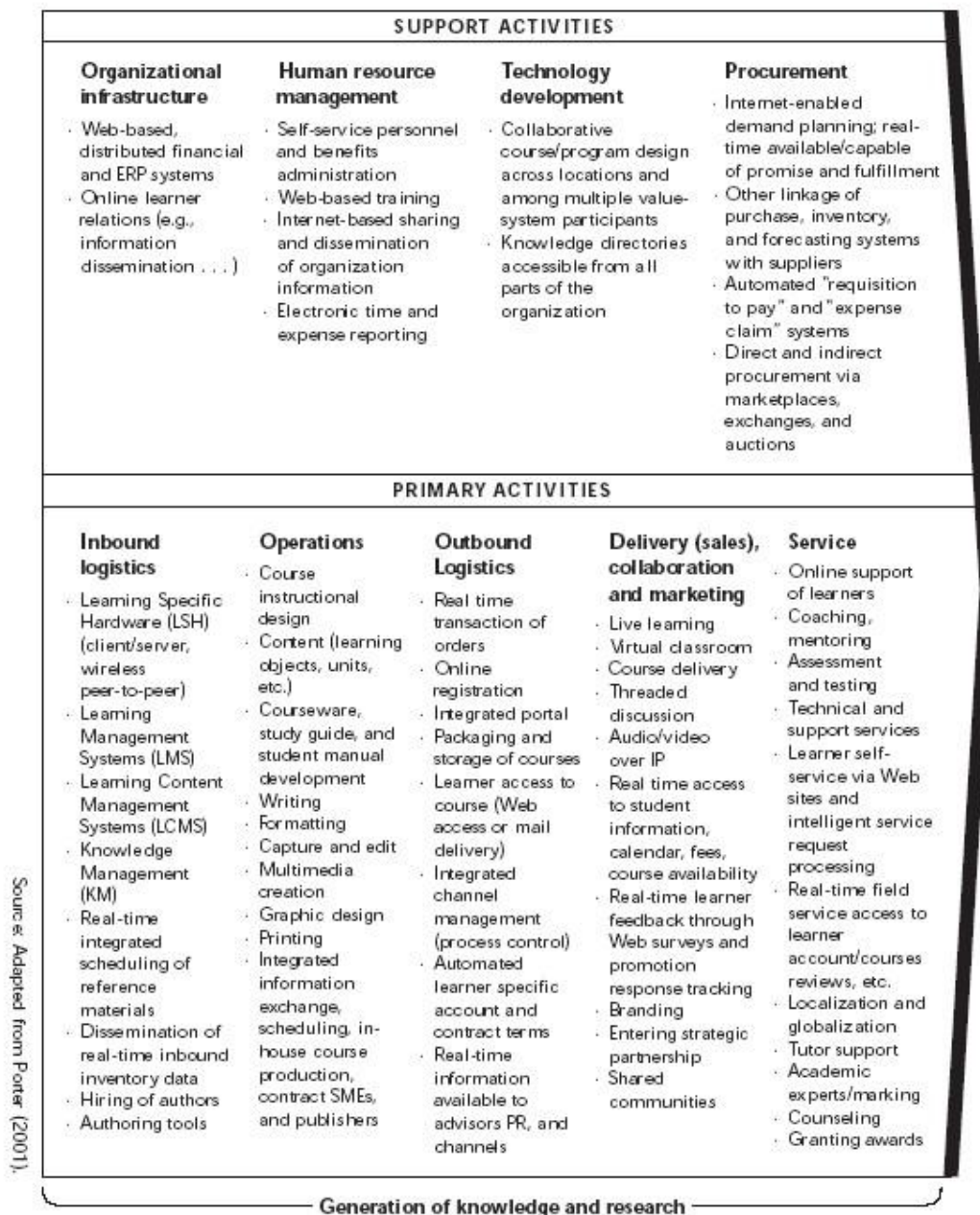
Table 2. Comparison of For-Profit Adult-Centered Universities, Extended Traditional Universities, and Traditional Residential Universities

From Hanna, (1998). Page 72.

APPENDIX B

Functions in the Value Chain

Adapted from Porter, M. (2001). Strategy and the Internet. *Harvard Business Review*, 79(3), 62-78. in Elloumi, 2004.



Source: Adapted from Porter (2001).

APPENDIX C

Value Chain Components and Their Related Cost Drivers

VALUE CHAIN ACTIVITIES	COST DRIVERS
Structural activities	
Manage location and articulate strategy. Location and strategic choices need constant articulation and are considered cost drivers. Activities in this category include framing the market opportunity, managing the scope of the market, managing the value proposition, managing the organization's unique resource system, articulating the financial model, and managing integration (vertical or horizontal).	number and location of satellite campuses, number of industry and social segments in which the institution is present, number of students or registrations
Manage technology. What process does the online learning institution use to manage its technology through the value chain? The level of expertise and effectiveness of use, compared to competitors, will affect overall organization-level costs.	types of process technologies
Manage complexity of university offerings. The breadth of the programs and courses being offered is an important driver of costs.	number of different courses and programs
Manage institutional structure. Financial structure, accountability, and debt level affect many costs and the organization's flexibility.	debt level, debt capacity, tax status (favorable or unfavorable)
Gain experience, learn, and manage skill sets. An organization's learning, growth, experience, and application of that experience drive significant portion of cost. For example, when a university lacks experience in developing online courses, this fact would be a significant driver of its online course introduction costs.	effectiveness of professional training, team building, knowledge sharing, economies of scale

Figure 3-5.
Examples of value
chain activities and
cost drivers.

Manage and support research activities. This activity requires that the institution develop, promote, and support an active research culture; network with funding agencies, government departments, companies, and other potential sources of funding; and support the development and enhance the reputation of the university's research profile.	amount of external funding; number of successful research publications; impact of research on learning, teaching, and support services; number of graduate programs
Procedural activities	
Provide quality. Quality management training, quality standards, and employee empowerment are directly related to overall organizational quality.	employee training level, student drop out rate, student satisfaction
Manage employees. Management determines employee-grouping schemes, including the degree of centralization of authority, size of work unit, and number of work units. The work environment and climate are also managed through the extent and nature of training, degree of employee empowerment, maintenance of a networked working environment, and other factors.	employee morale and satisfaction level, turnover rate, span of command
Manage capacity. Capacity utilization may be considered a strategic driver of cost of organizational offerings. Unused capacity must be dealt with through efforts to bring more students to the institution, reducing the capacity (if possible), changing some capacity constraining policies, or a combination of these strategies.	percentage of course development capacity utilization, percentage of delivery capacity utilization, percentage of tutorial system capacity utilization, discretionary policies restraining capacity

Manage efficiency. There are many type of efficiency, but this activity represents a broad perspective of efficiency, including efficiency in program and course introduction, and overall course production, delivery and student support.	lead time from program or course concept to up-and-running offering, course availability
Manage course complexity. Given the breadth of offerings for the online learning institution, procedures must be in place to control the complexity of the course design, production, delivery and service to student.	use of learning objects repository, standard components, and authoring and development tools
Operational activities	
Manage course production. The actual process of course development including writing, multimedia creation, editing, formatting, graphic design, printing, and Web publishing	number of faculty, instructional designers, editors, graphic designers
Manage inbound logistics. Preparation for course development, including curriculum planning; acquiring or preparing for learning specific hardware (LSH), learning management systems (LMS), and learning content management systems (LCMS); hiring of authors; ordering of reference materials, including textbooks; and formation of internal course teams.	hardware and software availability (LSH, LMS, LCMS), procurement, set-ups, number of direct-labour hours

Source: Adapted from Donelan and Kaplan (1998).

Adapted from Donelan, J. G., & Kaplan, E. A. (1998, March-April), Value chain analysis: A strategic approach to cost management. *Journal of Cost Management*, 7-15. in Elloumi, (2004).

APPENDIX D

The Relationship of E-commerce Strategy to Online Education
 All of the tables included in this appendix are from Granitz and Greene, (2003).

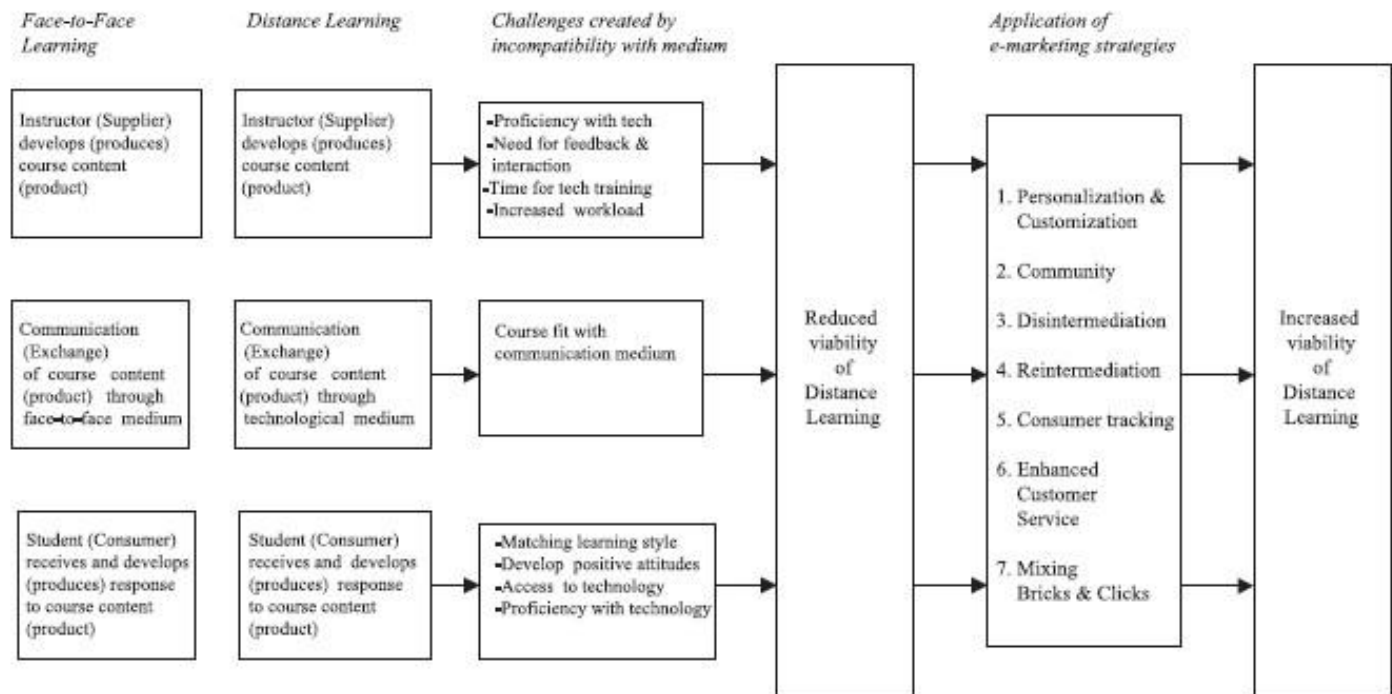


FIGURE 1: Applying E-Marketing Strategies to the Challenges of Distance Learning

TABLE 2
E-MARKETING STRATEGIES AND TACTICS TO MEET DISTANCE LEARNING FACULTY CHALLENGES

<i>Challenge</i>	<i>Strategy</i>	<i>Tactics</i>
Proficiency with technology Increased workload Time for technology training	Disintermediation and customization	Schools form alliances with other universities interested in a disintermediation strategy. Committee of instructors from the universities choose a publisher/service provider with expertise in converting class materials into a Web-friendly format. Committee then meets with publisher/service provider to convert lecture, exercises, quizzes, cases, and exams into online course template, leaving opportunities for individual professor customization. Publisher completely administers course to students.
Proficiency with technology Increased workload Need for feedback/interaction Time for technology training	Reintermediation, customization, and community	Schools form alliances with other universities interested in a reintermediation strategy. Committee of instructors from the universities choose a publisher/service provider with expertise in converting class materials into a Web-friendly format. Committee then meets with publisher/service provider to convert lecture, exercises, quizzes, cases, and exams into an online course template, leaving opportunities for individual professor customization. Suppliers develop an easy Internet communication interface and train faculty on this software (WebCT, Blackboard, eCollege). Faculty members then administer course with technological support from supplier. Faculty members participate in community.
Proficiency with technology Increased workload Need for feedback/interaction	Bricks and clicks	Universities or departments form partnerships with expert online distance learning schools. The two schools form a joint committee of professors to oversee and administer courses. Instructors interested in distance learning teach distance learning courses and/or distance learning portions of hybrid courses. Instructors preferring face-to-face learning teach face-to-face courses and/or the face-to-face portion of hybrid courses.
Need for feedback/interaction	Consumer tracking	1. Technological intermediaries, or instructors generate click stream reports to diagnose student patterns in viewing the material. Lecture/class activities can be restructured to better emulate student click stream. 2. Technological intermediaries or instructors generate student diagnostic reports tracking each student's quantity of participation, assignments handed in with date and grade of assignment, as well as dates lectures were accessed by student. Instructor offers suggestions for improvement.

TABLE 3
E-MARKETING STRATEGIES AND TACTICS TO MEET DISTANCE LEARNING COURSE CONTENT CHALLENGES

<i>Challenge</i>	<i>Strategy</i>	<i>Tactics</i>
Course fit with communication medium	Disintermediation	Apply to subject areas with large volumes of students with a strong desire to learn, standardized curricula, content with a fixed and narrow set of skills over which faculty members are less possessive and common across universities.
	Reintermediation	Apply to classes with large volumes of students with a strong desire to learn, standardized curricula, content with a fixed and narrow set of skills over which faculty members are less possessive and common across universities.
	Bricks and clicks	1. Respective instructors determine the portion that they believe is best suited for online delivery. 2. Determine what is best by adopting a hybrid strategy and letting students decide which they would like to attend.
	Community	Portions of the course suited for interactivity occur online.

TABLE 4
E-MARKETING STRATEGIES AND TACTICS TO MEET DISTANCE LEARNING STUDENT CHALLENGES

<i>Challenge</i>	<i>Strategy</i>	<i>Tactics</i>
Matching learning style	Personalization and customization	Instructors develop several configurations of the course that differ in the media (audio, video, etc.) used, in the sequence of the content presentation, and in focus for various business concentrations. Students fill out Myers-Briggs or other learning style classification scale, as well as information on their concentration. The course configuration matching student's learning style and concentration is presented when the student signs in.
Developing positive attitudes	Customer service and customization	1. Instructor and Student Services query current and potential students on their needs. 2. Customer service from Student Services: Create a communication coordinator position for online distance learning (housed in student services). Students receive e-mails before, during, and after the course on registration, status toward degree, accounts, library, and so on. Student services responds quickly to any e-mails received. Build simple, university-wide portal where students can access information on programs, courses, careers, accounts, status towards degree, and so on. 3. Customer service from faculty: Instructor sends e-mails to students before, during, and after the course regarding the syllabus, grades, status, course materials, reminders of assignments, chat times, and so on. Instructor responds quickly to any e-mail. Instructor creates simple Web site with course content, tutorials, bulletin board, chat, and links to e-mail site to purchase class materials, grades, status reports, and so on. 4. All developed portals and Web sites should allow for students to customize. 5. All technological interfaces must be user friendly.
	Customization	Create quizzes that test students to determine whether they are ready to move onto the next module. If they fail the quiz, program automatically feeds them the information they got wrong, including examples.
	Community	1. Create homepages with biosketches. 2. Schedule structured chat around cases and simulations. 3. Build bulletin boards for questions about class content/assignments. 4. Encourage e-mail/net conferencing among students by creating introductory and participative exercises online. 5. Schedule guest speakers online to participate in a topic discussion using chat.
Access to technology	Disintermediation Reintermediation	Suppliers provide technology to students. Course configured for broadband access or dial-up modem Internet speed boosters supplied to students.
Proficiency with technology	Bricks and clicks	1. Live training with technology or online tutorials with tech supplier. 2. Integrate online portions into regular classes as optional. 3. Have first class in degree structured so that it is a hybrid course—or implement obligatory tech training with exam/quiz.

VITA

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