MARKET ANALYSIS
FOR THE MBA
IN INFORMATION TECHNOLOGY

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October 25, 2001 (Revised)

Executive Summary

This study presents the analysis and rationale for moving forward quickly to implement the MBA in Information Technology (MBA-IT). This program represents a step toward educational service differentiation, which is necessary for NMHU to remain viable in the market for graduate business education. This document will outline the market for graduate business education, and how technology changes are threatening the traditional marketplace for NMHU's business programs.

The academic curriculum for this program was approved in November 2000; however, implementing this curriculum required a commitment by NMHU and financial investment during the first six months of 2001 of approximately 12,300. These monies were allocated for curriculum development, advertising and adjunct salaries. Estimated revenues for 2001 are $9360, with a return on investment for year one (2001) of $(2940) with total expenses of approximately $12,300. A conservative estimate of ROI over the next four years ranges from $25,000 in year two to $283,000 in year five.

This analysis is organized as follows: first a review of the literature presents a discussion of the estimated demand for information technology workers over the next six years. Next an analysis of NMHU's business program relative to the market for business education in the regional area is discussed in detail, followed by a discussion of providers of information technology education, NMHU's potential competitors. A detailed budget is presented as well.

Review of the Demand for Technology Workers and Technology Education

Overview

The growing demand for technology workers is coming from all sectors of the economy. Although it seems more reasonable to assume that the growing demand is due to demand from technology-oriented companies, in fact demand also is growing in non-technology companies. In general, the boom in information technology has reached all sectors of the economy, and in order to stay current all businesses must adopt information technology to some degree. To a great degree the future of the US economy is tied to its ability to produce technology workers.

The gap between the demand and the supply of technology workers is occurring worldwide. In Western Europe and Canada, as well as India, the demand for workers is rising faster than the supply of workers to fill open jobs (Giudice 2000, Rhoads 2000, Anonymous 1999). Indeed, in Western Europe over the next five years 13% of the total demand for IT jobs, or 1.6 million jobs, will go unfilled due to a shortage in skilled workers.

Estimates of the demand for technology workers in the US varies from a low of 850,000 over the next six years (Bort 2000) to a high of 1.6 million this year alone (Silverman 2000; *The Supply of Information Technology Workers in the United States 1999*). In general, most researchers place the demand for technology workers at the higher end of the estimate. Only about one half of the demand will be filled, according to Silverman (2000). She estimates that about 850,000 positions will remain unfilled over the next year.

National Trends in Demand for Information Technology Workers

The following trends emphasize particular areas of opportunity for New Mexico Highlands University. These trends were identified in the report, "The Supply of Information Technology Workers in the United States (1999) commissioned by the Computer Research Association (quoted below):

- Continued underrepresentation of particular groups, including women, Hispanics, African Americans, and Native Americans. According to the study, "if those groups were represented in the IT workforce in proportion to their representation in the US population, this country would have more than an adequate supply of workers to fill even the most dire estimates of a shortage."
- Increasing size, performance, reliability, flexibility, and price of IT equipment makes its use ubiquitous, and the demand for support is growing fast.
- Aging federal government workforce points to a growing need for technology workers in the government sectors.
- A debate over outsourcing versus in-house management of IT functions in the federal government has grave security implications.
- As the global e-economy and e-business expands, the shortage of IT workers will threaten productivity and business growth around the world.

Regional Demand for Information Technology Workers

The following table represents regional companies and their degree of need in the Information Technology area. All companies have expressed an interest in supporting NMHU's MBA-IT program; but they need more information before **'writing the check'**:

Company	**Number of Prospective Students**	**Type of Support Possible**
Los Alamos	<10 full time, 200 selected courses	In house promotion of program
Sandia Labs	Same as above	Same as above
Intel	100+ full-time, 2,000 for selected courses	In-house promotion, possible grants
Qwest	20-30 full-time (Denver) 100+ for selected courses In-house promotion	In-house promotion, possible grants, internships, fellowships
Motorola	10-20 full-time, 200+ for selected courses	In-house promotion, possible internships
Lovelace Health System	5-10 full-time, 50+ for selected courses	In-house promotion
St. Joseph	5-10 full time, 50+ for selected courses	In-house promotion
Medtronic	20-30 full time, 100+ for selected courses	In-house promotion
IBM	20-30 full time, 300+ for selected courses	In-house promotion, possible grants, internships

Demand Summary: 190-240 full time, 2900 for selected courses

How Universities respond to market needs for IT workers

Universities do not respond well to market needs because of their limited and already committed resources, tenured appointments that reduce flexibility and entrepreneurial spirit, and bureaucratic organizational structure (Supply of Information Technology Workers in the US (2000). The referenced report on the Supply of Information Technology Workers in the US (2000) provided many recommendations for universities to respond to the need for IT workers. Recommendations relevant to the NMHU technology programs are as follows:

- Create technology -oriented graduate programs
- Repackage CS, Computer engineering, MIS and other technical courses into certificate programs so that they will be more attractive to combine with other areas of expertise
- Design short, flexible courses that provide skills in the hottest software or hardware areas
- Partner with industry to identify future needs and student pools

The number of schools offering online technology oriented degrees is growing. In the southwest, the University of Phoenix, Colorado State University, and the University of Texas system have developed and are currently offering degrees in software engineering or information technology. The number of schools beginning to address the demand for technology workers is growing; however, within New Mexico no school is offering the type of program that NMHU School Of Business proposes here, other than the University of Phoenix.

Comprehensive Analysis of NMHU School of Business

This section provides a detailed analysis of the strengths, weaknesses, opportunities, and threats facing New Mexico's School of Business.

Strengths

NMHU's School of Business has a number of competitive competencies that it can use to build a sustainable market niche in the southwest region. First among these are the particular strengths that the faculty bring in delivering viable business education. The faculty strengths are demonstrated most notably by the addition of key faculty who have differentiated knowledge in specific areas. While the School of Business has competitive competency in a number of areas, this document focuses only on the technology base of expertise resident within the School of Business and the Computer Science department, the elements required to sustain a program in Information Technology.

Technical Expertise . In the Management Information Systems discipline, David West, Ph.D., Charles Swim, DBA, and Wayne Summers, Ph.D. are the key providers of the MIS programs currently in place.

Dr. David West updated the bachelor's degree in MIS and implemented an MBA concentration in Management Information systems, which is currently drawing a number of students into the MBA program mostly at the Rio Rancho center. His continued research in this area identified the initial need for the MBA-IT that the School of Business supports. Dr. West is a nationally known researcher in the Information Systems area.

Dr. Chuck Swim has provided ongoing course development for the MBA concentrations in both MIS and Electronic Commerce. His support of these programs continued through a number of very lean years in terms of MIS education at NMHU, before we were able to add additional faculty to support the program. Dr. Swim provides instruction in key areas not covered by other professionals, notably in E-Commerce and the management aspects of the Information Systems area.

In addition, the School of Business' ongoing relationship with the department of Computer Science, particularly with Dr. Wayne Summers, provides a strong center of technical expertise that can be leveraged effectively, we believe, in the marketplace. Dr. Summers provides additional expertise in the networking area, a key element of Information Technology education.

Strategic Alliances. NMHU's partnerships with our sister schools, particularly with Albuquerque TVI, San Juan College, and Santa Fe Community College, strengthen our presence in strategic markets and provide a conduit for students coming into our programs. These strategic alliances are the key to continued growth in our undergraduate programs and provide a means of building 'brand image' in our marketplace.

In addition, the School of Business is actively cultivating relationships with corporate sponsors in the region. Currently, NMHU School of Business faculty are meeting with the following corporations with a mission of building lasting partnerships: Intel, Qwest, Honeywell, Los Alamos National Laboratory, Sandia Laboratory, Motorola, Lovelace Health System, St. Joseph Healthcare System, Medtronic, and IBM. The purpose of these meetings is to build brand image and ultimately the exchange of value

between the entities. Ultimately these employers will become a conduit for students into the graduate MBA-IT program.

A new partnership with several corporate sponsors and LVTI will provide an ability to foster economic development in the region.

Market Presence. Although currently under attack by various regents, the School of Business recognizes the key importance of access to the growing demographic markets surrounding the I-25 corridor between Albuquerque and Santa Fe. Previous market analyses (Pacheco et al., 1994) identified the population growth of these areas and the need for educational services. In particular, our presence in Rio Rancho provides entrée into a market otherwise patently unavailable to us due to our remote location and the demographics of this growing market. We believe that this market presence, if wisely leveraged, can provide additional enrollment growth at the NMHU Las Vegas campus. These points will be discussed later in this paper.

Weaknesses

Brand Image. NMHU has a limited brand identity outside the New Mexico area. This was documented by a MBA field project completed in 1997 by Margaret Gonzales and Renee' Abeyta. These students completed a survey of four states, New Mexico, Colorado, Arizona, and Texas. 1400 respondents were surveyed and identified very limited brand identity outside of New Mexico. NMHU needs an aggressive marketing and public awareness campaign to build image.

Resource Constraints. Lack of resources or inadequate resources may limit the success of this program. This resource constraint limits the salaries of qualified

faculty and necessarily narrows the pool of talent that might be interested in coming to NMHU.

Limited Window of Opportunity. NMHU has about one year to implement an IT program; after that other providers will enter the market and limit the opportunity for NMHU.

Thinking small. NMHU has a tendency to 'think small'. This inhibits our ability to pursue realistic opportunities. This program has a potential to reform business education at the Las Vegas campus. We need to re-orient our thinking to fit a sizable opportunity.

Opportunities

Market Entry. The major opportunity here has to do with being early to the market. This document analyzes only the US market; international markets are also identified as underserved; and an online program could potentially meet this need as well.

Size of Demand and unmet need. As previously discussed the market for technology education is huge and growing. Size of the potential market is 1.6 million over the next 5 years. Even a market share of 1% would exceed NMHU's ability to serve the market. Realistically NMHU can expect a market share less than one half of one percent, and that market annually would exceed 8000 students.

Ongoing need . Due to changing technology once the market is established the Need for retraining with corporate customers will be constant. Our potential market of 8000 can be continually tapped for retraining opportunities.

Threats

NMHU School Of Business faces threats from continued penetration by major schools in online education. These threats are coming from major universities from all over the US and threaten to limit NMHU's growth off campus with non-traditional students, particularly at the graduate level. While the growth of online education continues, NMHU must position itself in sustainable niche markets to stay alive in business education.

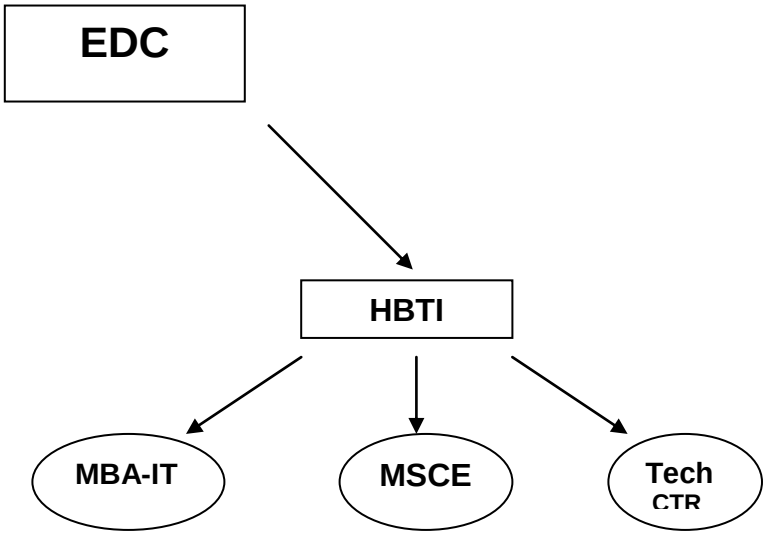
Highlands Business Technology Institute (HBTI)

The HBTI concept was initially conceived to provide a means of offering non-traditional online education to working adults. However, the concept of HBTI has grown into an umbrella organization within NMHU that houses technology education in all forms. The Technology Institute houses our traditional for-credit courses such as the MBA-Management Information Systems (MBA-IT), MBA-Electronic Commerce (MBA-EC), and certificate programs such as the MBA-IT.

In addition, we anticipate that skills education on-demand such as specific courses designed and implemented to satisfy corporate training needs (i.e. Linux training at Intel, Microsoft certification) will become a viable market for NMHU's technology education. Currently the School of Business is working with the Microsoft Certification group to bring the MSCE certification into the HBTI umbrella. Currently industry is paying a 30% premium for workers with this type of certification.

Third, a strategic alliance between NMHU, PDS Inc, and LCC will involve using NMHU technology graduates to service a growing technology center in the San Miguel County area. This technology center will provide a means of facilitating economic development in Northern New Mexico. The strategic alliance will be pursuing Department of Labor grants to facilitate the training and implementation of this center.

The concept of HBTI is as follows:



The MBA-IT will facilitate economic growth by training and upgrading existing workers in regional corporations. NMHU provides the academic courses and facilitates certificates and the MBA program.

The MSCE certification courses provide training to underserved areas and give undergraduate students additional, marketable skills.

Tech Center: HBTI students will provide human capital in the form of skilled workers who can maintain the information systems in the Technology center, and will facilitate retraining as needed. These students are envisioned as undergraduates who matriculate into the MIS program and stay in Northern NM to work. The Tech Center can provide internships and applied training opportunities for School Of Business graduates. Furthermore, they provide a labor pool for economic development in North

New Mexico. This is a key component of the Economic Development Center now under development in the School Of Business.