

Appendix A

LETTER OF NOTIFICATION (LON)

MASTER OF SCIENCE IN BUSINESS DATA ANALYTICS

Submitted By:

Dr. Muhammed Miah, Interim Chair Department of Business Information Systems

March 2023

Section I: Overview

Program information

Institution: Tennessee State University

Academic Program Name: Master of Science in Business Data Analytics (MSBDA)

Degree Designation: Master Degree

Proposed CIP Code: 30.7102

CIP Code Title: Business Analytics

CIP Code Definition: A program that prepares individuals to apply data science to solve business challenges. Includes instruction in machine learning, optimization methods, computer algorithms, probability and stochastic models, information economics, logistics, strategy, consumer behavior, marketing, and visual analytics.

Academic Program Liaison (APL)

Dr. Muhammed Miah

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Department of Business Information Systems

College of Business

Tennessee State University

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Proposed Implementation Date

Fall 2024

Section II: Background

Background Concerning Academic Program Development

Big data has become a major component in the world today. The need for workers capable of collecting, analyzing, and visualizing large amounts of information continues to grow exponentially. However, the production of such large datasets also requires understanding and having the proper tools to parse through them to uncover the useful information for better decision making. Therefore, many data science and data analytics programs are being developed in academic institutions to better prepare the needed industry workforce. Hence, more companies rush to become data-driven in business, Big Data continues to play a pivotal role. According to a study by Markets and Markets, the data analytics market size is projected to grow from \$95.3 billion USD in 2021 to \$322.9 billion USD in 2026, a compound annual growth rate (CAGR) of 27.7%.¹

Businesses across the world are looking for business data analysts preferably with a Master degree. Therefore, a Master of Science in Business Data Analytics (MSBDA) degree not only puts the graduates ahead of the competition, but it also provides the skills needed to successfully make effective business decisions. The Master of Science in Business Data Analytics program is

¹ IT Business Edge (May 25, 2022). Top Big Data & Data Analytics Jobs in 2022, <https://www.itbusinessedge.com/business-intelligence/big-data-and-data-analytics-jobs/>

designed to give participants an understanding of how to look at data and identify insights, improve their ability to make long-term predictions, and prescribe future actions to help make better business decisions. With a curriculum focused on real-world applications, our one-year Master of Science in Business Data Analytics program will prepare the students to make data-driven decisions that move businesses and entire industries forward. Due to a critical shortage of professionals who can use advanced data analytics methods to translate unstructured data into valuable business insights, the graduates will be positioned to make an immediate impact in the workforce.

Purpose and Nature of Academic Program

The purpose of the proposed proposal aims to gain approval to offer the Master of Science in Business Data Analytics degree program. The Department of Business Information Systems proposes 30 credit hours Master degree to be completed Online in 12 months. The delivery method of this proposed degree program is fully online, and no in-person class attendance will be required. The primary academic purpose of this professional degree program is to develop professional workforce that is prepared to address the needs in the rapidly expanding data analytics field to make better business decisions. The students will be educated to work and excel in a variety of work settings to supply qualified workforce to an industry which is currently looking for cost effective ways of delivering more effective decision making based on diverse and heterogeneous data sets.

The primary academic objectives for this proposed Master of Science in Business Data Analytics program are to develop high-level skills for graduates in:

- Identifying and solving problems as well as making decisions by appropriately analyzing data
- Acquiring, analyzing and exploring data
 - Acquiring: getting, cleaning, archiving, integrating data
 - Analyzing: visually, mathematically, statistically
 - Exploring: seeking trends and patterns
- Managing and communicating data narratives (stories) that transform data into actionable information
- Exposure to real-world problems, through applied courses using various required data analytics tools

Alignment with State Master Plan and Institutional Mission

Tennessee higher education master plan focuses on three main sections: Student Success, Family Prosperity, and The Future Workforce². The proposed Master of Science in Business Data Analytics program aligns with the state master plan as the program will prepare the students with the skills needed in the high demand technology field of big data and data analytics for their success not only to fill the workforce but also in their family and social life. The newly proposed program also aligns with TSU's mission as it will prepare a diverse group of competitive graduates focusing academic excellence through scholarly inquiry, teaching, research, lifelong learning, and public service. The graduates of the program will serve as the leaders in the global

² <https://files.eric.ed.gov/fulltext/ED608937.pdf> Last accessed on October 5, 2022

workforce and be an important component of global economy with a commitment to service and learning; that aligns with the mission of TSU College of Business.

Institutional Capacity to Deliver the Proposed Academic Program

The proposed Master of Science in Business Data Analytics program will be housed in the TSU Avon Williams (Downtown) campus. Educational facilities exist in the downtown campus is adequate to offer this program and will be utilized effectively. There is no Master of Science in Business Data Analytics program offered by a public or private institution serving the Nashville Metropolitan area. The proposed program will not be a threat to any existing program.

Existing Programs Offered at Public and Private Tennessee Institutions

Tennessee provides a wide variety of educational programs related to data analytics both on-campus and online. Table 1 provides the list of universities in Tennessee that offer Business Data Analytics related Master programs.

Table 1. Existing programs in Tennessee

| Institution | Degree | Major | College | No. of Credit Hours | Delivered Method |
|--|----------------------|---|--|---------------------|-------------------|
| University of Tennessee Knoxville | Master of Science | Business Analytics | College of Business | 36 | Online |
| University of Tennessee at Chattanooga | Master of Science | Data Analytics | Jointly by College of Business and College of Engineering & Computer Science | 36 | On-Ground |
| Middle Tennessee State University | Master of Science | Data Science | College of Basic and Applied Sciences | 36 | On-Ground |
| Middle Tennessee State University | Master of Science | Information Systems with a concentration in Business Intelligence & Analytics | College of Business | 30 | On-Ground |
| University of Memphis | Graduate Certificate | Data Analytics for Technology | College of Business | 12 | On-Ground |
| East Tennessee State University | Graduate Certificate | Data Analytics | College of Business and Technology | 12 | On-Ground/ Online |

| | | | | | |
|---------------------------------|----------------------|--|---|--|-----------|
| East Tennessee State University | Master of Science | Information Systems, with Data Analytics Concentration | College of Business and Technology | 33 (12 for Data Analytics Concentration) | On-Ground |
| Austin Peay State University | Graduate Certificate | Data Science | College of Science, Technology, Engineering & Mathematics | 18 | Online |
| Vanderbilt University | Master of Science | Data Science | Data Science Institute | 48 | On-Ground |
| WGU Tennessee | Master of Science | Data Analytics | Information technology | | Online |
| Lipscomb University | Master of Science | Data Science | College of Computing and Technology | 30 | On-Ground |
| | | | | | |
| Tennessee State University | Master of Science | Data Science | College of Engineering | 30 | Online |

Even though TSU Computer Science department offers a Master of Science in Data Science program, but our proposed program will have no effect on that program. While the fields of data science and business data analytics are similar in that both use data to help understand an organization’s operations, the two disciplines have different focus areas. In simple terms, a business data analyst makes sense out of existing business data, whereas a data scientist works on new ways of capturing and analyzing data to be used by the analysts. A business analyst typically works on answering specific questions about the organization’s business. A data scientist may work at a more macro level to develop new ways of asking and answering important questions.

Although each role is focused on analyzing data to gain actionable insights for their organization, the skillsets and tools they use differentiate them. Data science technical skills evolve from computer science, programming languages, machine learning, statistics, whereas, the business data analysis knowledge areas include data warehousing and analytics, data modeling, data mining, and data visualization tools.

Accreditation

The proposed program will be the part of the College of Business programs and is accredited both by The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) and Association to Advance Collegiate Schools of Business (AACSB International). The accreditation process for the proposed program will start after launching of the program.

Administrative Structure

Figure 1 provides the organizational chart for the Department of Business Information Systems in the College of Business. The proposed program will be housed in the Department of Business Information Systems and managed by the Department Head. The recruitment, advising, and marketing will be administered by the office of the Director of Graduate Studies, College of Business.

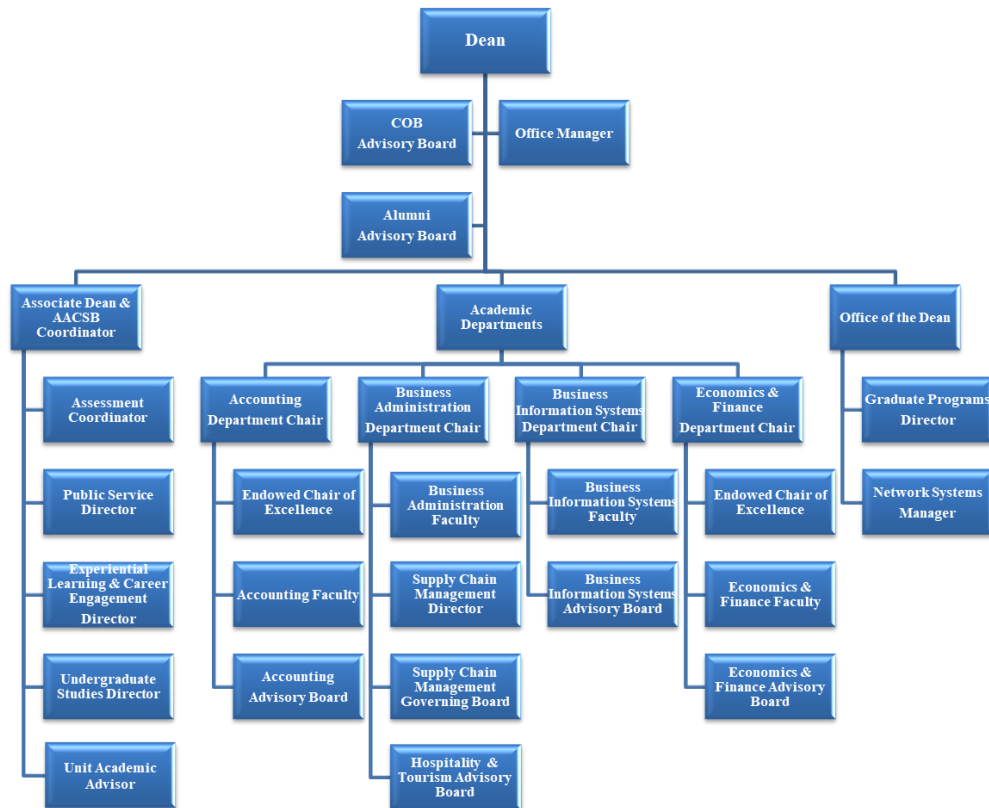


Figure 1. Organizational Chart

Section III: Feasibility Study

Student Interest

A survey was conducted among the TSU College of Business current undergraduate students to explore the interests among them about the proposed program. The Figure 2 displays the survey results.

Seventy (70) students responded to the survey. The students expressed very positive interests towards the proposed program. Question 1 asked whether the students believe that the proposed MSBDA degree would provide them with a better career opportunity. The survey result shows that 90% answered “Yes” to this question. Question 2 asked whether the students believe that the proposed MSBDA degree would provide them with a better earning potential, and 93% said “Yes”. Question 3 asked whether the students believe that the proposed MSBDA degree with

hands-on experience with real world data using various widely used tools in industry would provide them with the skills needed in the field. The survey result shows that 97% of the students said “Yes”. Question 4 asked whether the students are interested, or will consider, pursuing the proposed MSBDA degree, and the result shows that 67% said “Yes, they will consider” whereas 33% said “No, they will not consider”. We also requested the student contact information in Question 5 for further communication once the program launches. Overall, as mentioned earlier that the students showed a very strong positive interest for the proposed MSBDA program.

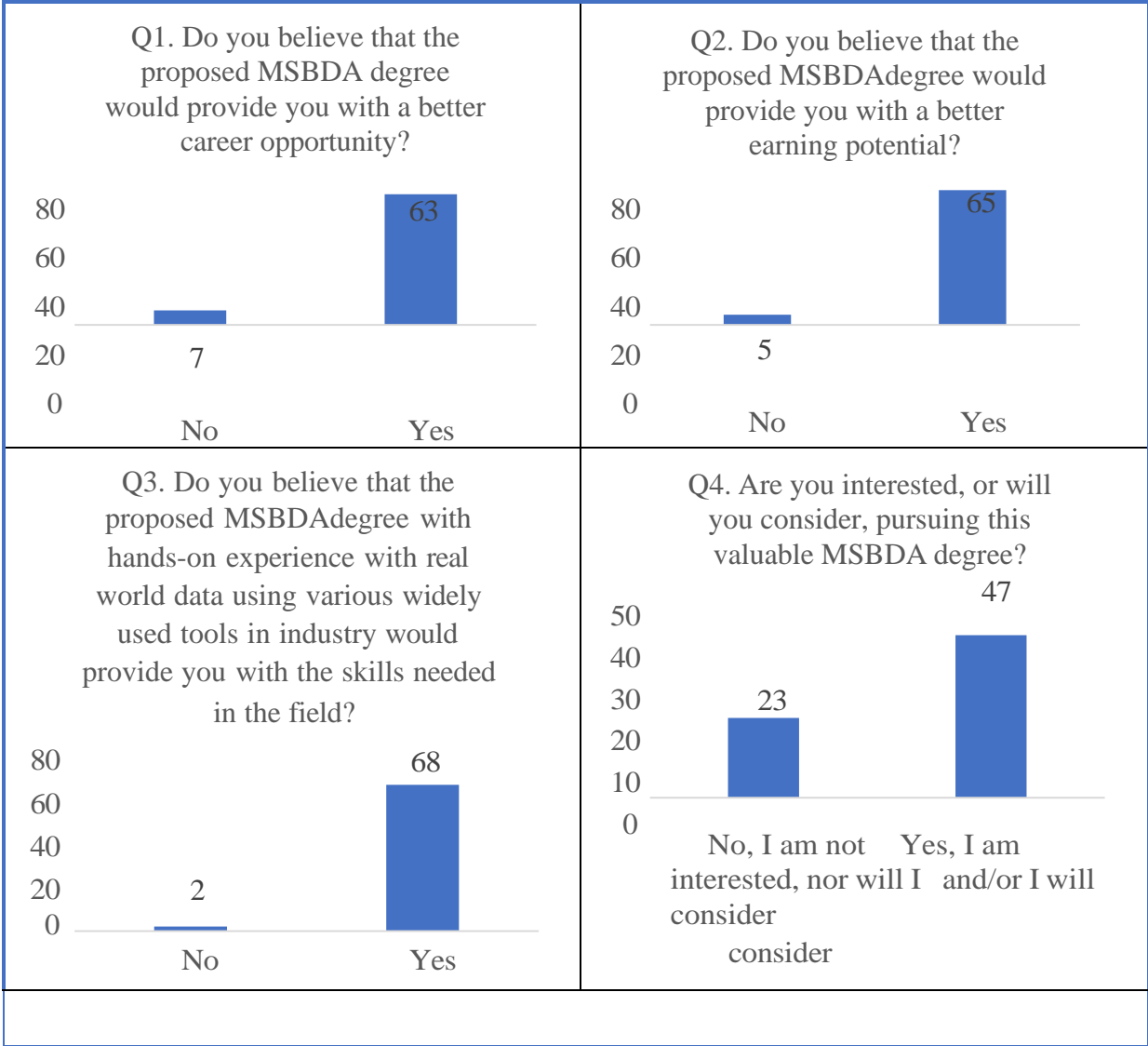


Figure 2. Student Survey Results

Local and Regional Need/Demand

Data analytics is a field ripe with opportunity, as companies across all industries have made big commitments to big data. The ability to gather, prepare, analyze and display data is one of the

most sought-after skill sets across all industries. In TN, manufacturing, finance, real estate, and health care are among the core industries, and the state's economic growth is contingent on a strong and well-trained workforce in data analytics as companies rely on data to make informed business decisions.

According to the Bureau of Labor and Statistics, there are 230 Tennessee employees classified as Computer and Information Research Scientists. But, it's important to recognize that data analysts are only a portion of that number. A mere 5.5% of the workforce is in the data science/analysts sector.³ A Google Jobs search yields over 100 job postings for data scientists in Tennessee. While this will certainly ebb and flow over time, it's a good indication that the state's industries have recognized the value of data science expertise.

A 2018 Tennessean news article reported that Nashville was named the fastest-growing small-market tech talent pool in North America by commercial real estate firm CBRE. However, Nashville lacks the required tech workforce to compete with high-tech regions in the country, especially in Data Analytics. These tech roles are now one of the most sought-after disciplines in the employment market.⁴

Because data science/analytics is becoming essential in almost every type of business, the academic offerings in this discipline continues to grow.

Employer Demand

The Bureau of Labor and Statistics expects the number of hired Data Analysts to grow by 25% during the decade from 2020 to 2030⁵. This represents a much sharper increase than the average for other professions. During this decade, it is projected that there will be more than 10,000 openings for qualified Data Analysts.

Metropolitan cities are projected to be where most data analytics job openings will be in the next few years. Job prospects are expected to be quite good for qualified Data Analysts. Because many companies are still struggling to find qualified applicants to fill openings due to the talent shortage, job prospects are expected to continue to be strong in data analytics throughout the next decade.

This promising job outlook for data analysts is due to the increasing need for better market research across a range of different industries. By extracting, analyzing, and interpreting vast quantities of data, data analysts can obtain useful research insights that can influence market and business decisions.

³ Discover Data Science: Data Science Degree Programs in Tennessee, <https://www.discoverdatascience.org/states/tennessee/>

⁴ The Tennessean: Are you a data scientist? Nashville needs you. <https://www.tennessean.com/story/opinion/2018/11/17/nashville-data-scientist-jobs-available-taking-opinion/2012522002/>

⁵ <https://www.nobledesktop.com/careers/data-analyst/job-outlook>

Since the positions require specific analytical skills, they can be challenging to fill. Many companies leave jobs open until they find the right candidates, or they hire the best available people and train them on the job. The industries with the highest demand for data analysts include but not limited to Information Technology, Healthcare, Finance, Insurance, and Professional services.

The global market for data analytics was \$231.43 billion in 2021, and is expected to grow by a compound annual growth rate (CAGR) of 13.2% in the upcoming half a decade, reaching \$549.73 billion by the year 2028. North America is expected to keep leading the market, with the U.S. alone holding about 85% North America's data analytics market.⁶

We conducted an industry/corporate survey to explore the interest of the organizations toward the proposed MSBDA program. Figure 3 displays the survey results. Question 1 first provided a brief general overview of the program skills (Business Data Analytics is focused on using the big data tools as implemented with data analysis to determine business decisions and implement practical changes within an organization. A business data analyst is tasked with collecting, processing and analyzing how available data can be used to explore important insights that can help businesses improve efficiency or solve problems.) and then asked whether the organization be interested in job candidates with those skills. The results show that 47% are extremely interested and 23% are somewhat interested. The results also show that 73% said the proposed program would benefit their employees. 73% answered that their organizations would be interest to enroll their employees in the proposed program as well. 43% said they have employee tuition reimbursement in place for Master degree and 23% said they don't have the reimbursement program in place at the moment but they are considering for future. We also see from the survey data that the survey respondents were from different industries including IT, Banking & Financial Services, Healthcare, Accounting, and so on. The respondents included from various positions such as Supervisor/Project Manager, Senior Level Executive (eg. President/CEO, Vice President), Middle Manager/Director, etc. 17% said they are affiliated with TSU in some way and 40% said are not affiliated with TSU.

Overall, we can see that the industry/corporate sector shows a very positive attitude towards the proposed MSBDA program.

⁶ <https://www.datamation.com/careers/data-analytics-job-market/>

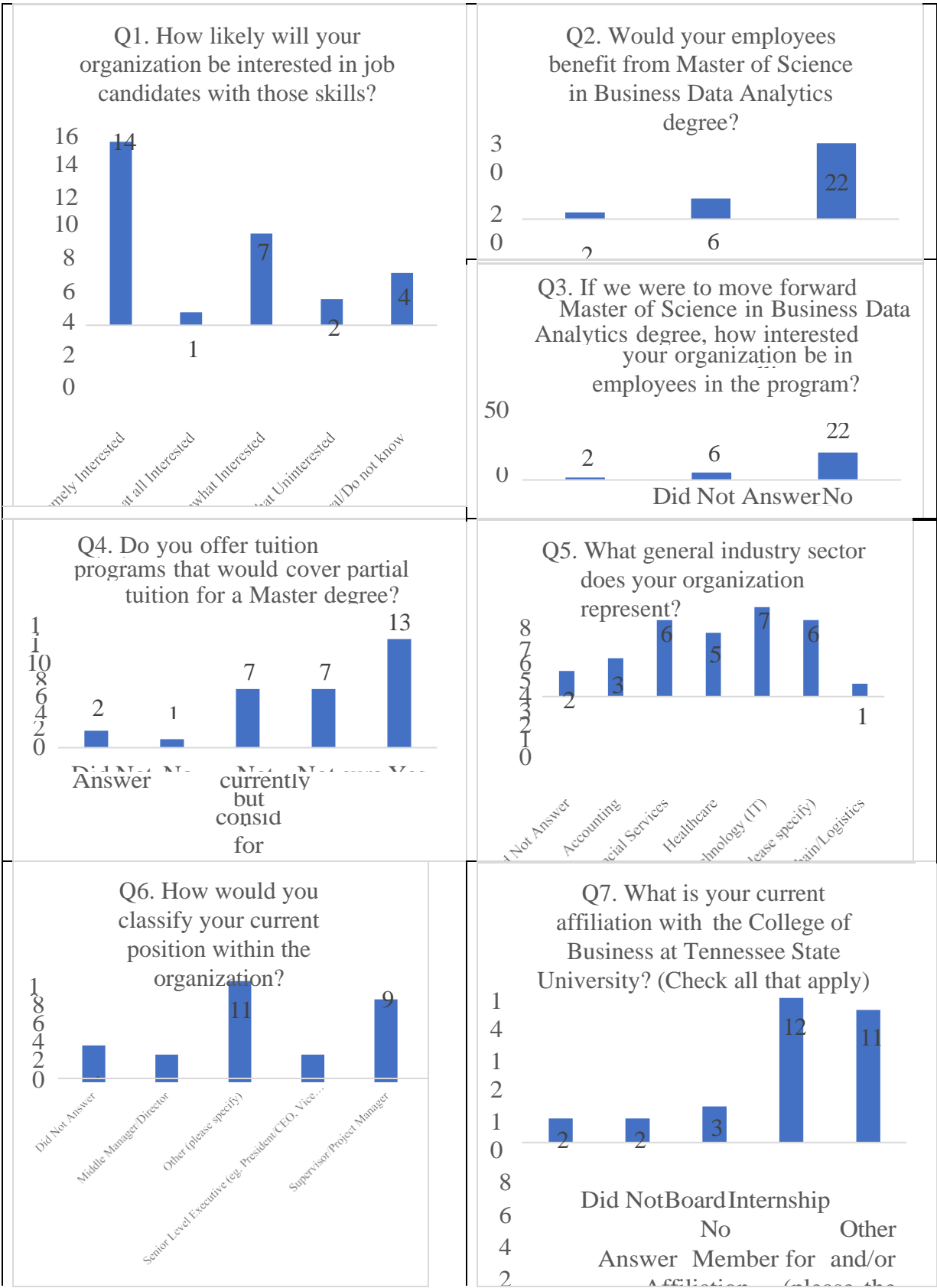


Figure 3. Industry/Corporate Survey

Community and Industry Partnerships

The BIS department has an Advisory Board comprising of people holding at least management positions from related industry. The board currently has 8 (eight) members. The board meets at least twice every semester with the BIS faculty. The advisory board helps the department in various aspects including but not limited to:

Curriculum

- Provide input relative to competencies required of successful graduates
- Review programs and identify needed modifications and improvements appropriate to ensure currency
- Identify employers/companies to complete program effectiveness evaluation forms
- Provide guidance in developing and implementing executive education programs for business leaders

Recruitment

- Assist in the recruiting of quality faculty, students, and resource persons to the Department

Promotion

- Serve as an ambassador and a voice for the department and promote externally a quality image of the department

Operations

- Provide input on the mission, goals, and strategic plan of the department
- Periodically meet with the faculty of the department to be informed and give input relative to advancing the department

Financial

- Stimulate fund raising at the board level
- Provide financial assistance (not required) to support the department programming and initiatives
- Assist in strengthening the financial resources of the department to support student scholarships, student professional enrichment activities, student trips to professional meetings and competitions, faculty research, faculty development and Department initiatives

Placement

- Assist students for internship placement and viable permanent employment opportunities for graduates

Participation

- Share personal experiences, professional expertise, and provide guidance on contemporaneous matters in the classroom
- Assist in identifying business and community leaders to serve on the Board of Advisors
- Play an active role in the department and COB Annual Awards Program, MBA events, and other professional and special events

Development

- Develop networking events for students with business leaders
- Suggest appropriate company field trips for BIS Students
- Help identify service projects for BIS students

Letters of support from workforce partners are provided in Appendix A.

Section IV: Enrollment and Graduation Projections

The projected enrollment, attrition, and graduates are shown in Table 1. We assume that in the first year twenty students will enroll in the program. We are also assuming a 10% increase in enrollment every year.

| Year | Academic Year | Projected Total Fall Enrollment | Projected Attrition | Projected Graduates |
|------|---------------|---------------------------------|---------------------|---------------------|
| 1 | 2024-2025 | 20 | 1 | 19 |
| 2 | 2025-2026 | 22 | 1 | 21 |
| 3 | 2026-2027 | 24 | 1 | 23 |
| 4 | 2027-2028 | 27 | 1 | 26 |
| 5 | 2028-2029 | 30 | 1 | 29 |

Section V: Projected Costs to Deliver the Proposed Program

The proposed program does not require any additional costs to deliver. The existing faculty, staff, and resources are sufficient to deliver the program. The THEC Financial Projections Form is provided in Appendix B.

Faculty & Instructional Staff

There is no new cost associated with current and anticipated faculty and instructional staff for the proposed program.

Non-Instructional Staff

There is no new cost associated with non-instructional staff.

Graduate Assistants

There is no new cost associated with current and anticipated graduate assistants.

Accreditation

There is no new cost associated with regional and/or programmatic accreditation.

Consultants

There is no need of consultant.

Equipment

There is no need for new equipment.

Information technology

There is no need for additional information technology acquisitions.

Library resources

There is no need for additional library acquisitions.

Marketing

There is no new cost associated with the marketing for the proposed program.

Facilities

There is no new cost associated with facilities.

Travel

There is no new cost associated with travel.

Other resources

There is no need for additional resources.

Section VI: Projected Revenues for the Proposed Program

Tuition

The program cost is \$15,990 for Tennessee residents and \$33,450 for non-Tennessee residents.

Table 2 provides a breakdown of tuition costs and associated fees.

Table 2. Anticipated Tuition Revenue

| Description | In-State Tuition | Out of State Tuition |
|-----------------------|------------------|----------------------|
| Cost Per Credit Hours | \$533 | \$1,115 |

| | | |
|--------------------|----------|----------|
| Total Credit Hours | 30 | 30 |
| Total Cost | \$15,990 | \$33,450 |

The program fee does not include the following:

- Books, professional subscriptions, and supplies
- Laptop computer and basic software such as Microsoft Office (If needed, students will be able purchase software at a discount through TSU)

Upon program acceptance, a non-refundable \$500 commitment deposit will be required to reserve a slot in the class and enroll in the program. This amount will be applied to the first tuition payment. Students will be responsible for any late payment fees/fines assessed by Tennessee State University.

Grants

There are no secured grants for the proposed program at this time.

Other

No other revenue to report at this time.

Appendix A: Letters of Support



October 18, 2022

Muhammed Miah
330 10th Ave North, Room K-413
Nashville, TN 37203

Re: Letter of Support for Tennessee State University's Master of Science in
Business Data Analytics program

Dear Muhammed Miah,

By way of brief introduction, I'm Jill Thielmann, Director, US Academic Business Development at The Computing Technology Industry Association, Inc. (CompTIA) and an Advisory Board member of Tennessee State University (University).

CompTIA is a leading voice and advocate for the \$5 trillion global information technology ecosystem; and the estimated 75 million industry and tech professionals who design, implement, manage and safeguard the technology that powers the world's economy. Through education, training, certifications, philanthropy and market research, CompTIA promotes industry growth; the development of a highly-skilled workforce and a commitment to creating an environment where innovation happens and the opportunities and benefits made possible through technology are available to all.

In my capacity as an Advisory Board member at the University, I advise the school on how to incorporate CompTIA's learning materials and certifications into its courses and curriculum. CompTIA certifications are a vendor-neutral and considered the gold standard by many employers. The University's Master of Science in Business Data Analytics program includes courses and curriculum that prepares students for CompTIA's Data+ certification.

I am thrilled to be on Tennessee State University's Advisory Board as it aligns with CompTIA's mission to build a longer pipeline for tech talent to meet the industry's insatiable demand. Please do not hesitate to contact me at jthielmann@comptia.org if you have any further questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Jill Thielmann", with a long horizontal line extending to the right.

Jill Thielmann
Director, US Academic Business Development
jthielmann@comptia.org
630-678-8334

To Whom it May Concern:

My name is Eric Boyd and a resident of Middle TN. I am a spring 2003 Business Information Systems graduate of Tennessee State University. I am currently an IT Project Manager at Vanderbilt University Medical Center. Also, I sit as the Chair of the Advisory Board for the Business Information Systems department. I am excited to see this opportunity to digitize small business operations and bridge the digital divide.

A new graduate program of Master of Science in Business Data Analytics is a step to make TSU students competitive in today's workforce. I work closely with Data Analysts in Entertainment and Healthcare Industries. Data drives decisions. This is a step in making TSU graduates competitive in a growing space of data analytics.

I witness executives in both industries create jobs around business and data analytics. Every department in a corporate setting leverages data. There is a need to build upon the exposure from the TSU undergraduate experience for today's students. Today's student still needs to grow and expand their knowledge and exposure to data visualization programs, and presentation approaches, and truly understand the career opportunities in this space. A Master's program can provide students an advantage in today's workforce.

Please consider investing in the BIS department by accepting their proposal to expand higher-educational options. This gives Tennessee State University and the College of Business a competitive option in this market to shape the minds of tomorrow's business leaders.

Regards,

Eric Boyd

Advisory Board of Business Information Systems - Chairman

Appendix B: THEC Financial Projections Form

| Appendix B: THEC Financial Projections Form | | | | | | |
|---|--|--------|--------|--------|--------|--------|
| Institution | Tennessee State University | | | | | |
| Program Name | Master of Science in Business Data Analytics (MSBDA) | | | | | |
| Projected One-Time Expenditures | | | | | | |
| Category | Planning | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Faculty & Instructional Staff | - | - | - | - | - | - |
| Non-Instructional Staff | - | - | - | - | - | - |
| Graduate Assistants | - | - | - | - | - | - |
| Accreditation | - | - | - | - | - | - |
| Consultants | - | - | - | - | - | - |
| Equipment | - | - | - | - | - | - |
| Information Technology | - | - | - | - | - | - |
| Library resources | - | - | - | - | - | - |
| Marketing | - | - | - | - | - | - |
| Facilities | - | - | - | - | - | - |
| Travel | - | - | - | - | - | - |
| Other | - | - | - | - | - | - |
| Total One-Time Expenditures | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Projected Recurring Expenditures | | | | | | |
| Category | Planning | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Faculty & Instructional Staff | - | - | - | - | - | - |
| Non-Instructional Staff | - | - | - | - | - | - |
| Graduate Assistants | - | - | - | - | - | - |
| Accreditation | - | - | - | - | - | - |
| Consultants | - | - | - | - | - | - |
| Equipment | - | - | - | - | - | - |
| Information Technology | - | - | - | - | - | - |
| Library | - | - | - | - | - | - |
| Marketing | - | - | - | - | - | - |
| Facilities | - | - | - | - | - | - |
| Travel | - | - | - | - | - | - |
| Other | - | - | - | - | - | - |
| Total Recurring Expenditures | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| | | | | | | |
|--------------------------------------|-----|-----|-----|-----|-----|-----|
| Grand Total (One-Time and Recurring) | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| | | | | | | |
| Projected Revenue | | | | | | |

| Category | Planning | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|----------|-----------|-----------|-----------|-----------|-----------|
| Tuition | - | \$303,810 | \$335,790 | \$367,770 | \$415,740 | \$463,710 |
| Grants | - | - | - | - | - | - |
| Other | - | - | - | - | - | - |
| Total Revenues* | \$0 | \$303,810 | \$335,790 | \$367,770 | \$415,740 | \$463,710 |
| * The revenue calculations only consider in-state tuition. Students with out-of-state will provide more revenue. | | | | | | |

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