Agendum
Oakland University
Board of Trustees Formal Session
June 21, 2021

MASTER OF SCIENCE IN BUSINESS ANALYTICS
A Recommendation

1. Divisions and Departments: Academic Affairs and School of Business Administration

2. Introduction: The Oakland University (OU) School of Business Administration (SBA) seeks approval of the proposed Master of Science in Business Analytics (MSBA) degree.

SBA currently offers MS in Information Technology Management (MSITM) degree, which is an established program. The MSITM program offers concentrations in Business Analytics (MSITM-BA) and Information Security Management (MSITM-ISM). Students can also have a general IT Management focus. This proposal seeks to separate the Business Analytics concentration and offer it as a standalone program – Master of Science in Business Analytics (MSBA). The requirements for this degree are the same as the MSITM-BA concentration. The proposed start date for the MSBA program is Fall 2021.

Oakland University does not have a graduate degree specific to data analytics/business analytics/data science. Employers are specifically looking for graduates from an analytics degree program. Currently, MSITM students are being disadvantaged since their degree does not explicitly say that their degree is focused on Business Analytics. Instead, it is just a concentration within the MSITM degree, though the amount of course work being done in this concentration is comparable to a complete degree in business analytics. For Oakland University students who are seeking a career in the analytics area, it is an uphill battle since students from surrounding universities receive a degree in business analytics. This makes our students less competitive, though they are acquiring all the necessary analytics skills in their MSITM-BA program. Basically, the MSITM degree doesn't include "Business Analytics" in the title and, hence, doesn't have the name recognition that employers are looking for. A separate MSBA program would greatly help our students to be more competitive and launch successful careers in the analytics area.

There is significant demand for Business Analytics professionals. There are a large number of jobs available and employers are not able to find qualified people to meet their needs. OU students with the MSBA degree will be able to readily take up these jobs and embark on successful careers in analytics.

The Program
OU's MS in Business Analytics degree is designed for professionals seeking to deepen their understanding and develop their skills in harnessing data to identify opportunities, respond to challenges, influence decision making and implement successful solutions. Graduates of the program will be equipped to use data to solve business problems across industries and disciplines. Industries experiencing strong growth in the use of business analytics include financial services, retail, health services, accounting and auditing, transportation and logistics, entertainments, sports and travel.

Through the combination of the focused curriculum, experiential learning and expert-led courses, students will graduate with the skills to make data-driven decisions based on their business knowledge and ability to expertly utilize a variety of statistical and quantitative methods, computational tools and predictive models.

The program is structured around four modules:

- Preparatory and Foundation Courses – Required for students who lack an information systems and/or statistics background. Students with the necessary background will be waived from these courses. *Credits from these courses do not count toward the degree.*
- Core Courses (9 credits) – Provides analysis, design and implementation skills
- Elective Courses (18 credits) – Develops in-depth knowledge in analytics
- Capstone Project (3 credits) – Synthesizes and applies students' knowledge to contemporary issues

The MSBA degree program requires a minimum of 30 credits. The admission requirement, program requirements, course-offerings, delivery method and advising structure will all remain the same. No new courses are required. In essence, the structure of the MSBA program is exactly the same as the MSITM Business Analytics concentration.

The MSBA program will be stronger and more competitive since it is focused on Business Analytics with more depth (18 credits of Analytics Courses and 3 credits from the IT Core). The name of the degree and the course offerings will be readily recognizable by all external stakeholders (prospective students, employers, and collaborators). Hence, this program will be more attractive and positively impact our enrollment.

The MSBA program will be STEM coded. This will be attractive for international students since they can have three years of practical training after completing the degree. There is considerable demand for STEM coded Business Analytics programs from international students. Hence, this program has the potential to attract many international students and increase graduate enrollment. This will greatly support the University's goal of increasing graduate enrollment in the next few years.

3. Previous Board Action: None.

4. Budget Implications: The proposed MSBA program is prepared to start in Fall 2021 and is expected to generate a positive revenue beginning year 1. There are no additional resources needed. Initially, the current MSITM Faculty Director will support the MSBA program. However, over time, as the MSBA program grows, there may be a need for a dedicated Faculty Director for the MSBA program.

5. Educational Implications: The MSBA degree is consistent with the OU mission in its four essential ingredients – teaching, scholarship, service, and student development. This will be translated through:

- Rigorous education delivered by faculty who are doctorally qualified and have expertise in business analytics, quantitative methods, information systems and operations management.
- Students and faculty working together on research projects and publishing papers in journals and conference proceedings, presenting papers in conferences and workshops.
- Student, faculty, and community partner engagement in experiential learning through capstone projects and internships.
- Students providing service to the community through projects for non-profit organizations and city/county governments.

6. Personnel Implications: No new courses are being added or deleted. All the courses that are part of the proposed MSBA program are currently being offered as part of the MSITM-BA concentration. There are many well-qualified faculty currently teaching these courses that can lend support to the MSBA program.

7. University Reviews/Approvals: The proposal for the MSBA Degree was reviewed and approved by the SBA Graduate Committee, SBA Executive Committee, SBA Faculty Assembly, SBA Dean Michael Mazzeo, Oakland University Graduate Council, Oakland University Senate, and the Executive Vice President for Academic Affairs and Provost.

8. Recommendation:

WHEREAS, the Master of Science in Business Analytics Degree is consistent with objectives contained in Oakland University's Institutional Priorities; and

WHEREAS, the Master of Science in Business Analytics Degree will respond to the demand for formally educated and trained graduates with business analytics and data science skillsets; now, therefore, be it

RESOLVED, that the Board of Trustees authorizes the School of Business Administration to offer a Master of Science in Business Analytics Degree; and, be it further

RESOLVED, that the Executive Vice President for Academic Affairs and Provost will complete annual reviews of the Master of Science in Business Analytics Degree to evaluate academic quality and fiscal viability to determine whether the program should be continued.

9. <u>Attachments:</u> Attachment A – Proposal for the Master of Science in Business Analytics Degree.

Submitted to the President
on 6/14, 2021 by

Britt Rios-Ellis, M.S., Ph.D.
Executive Vice President for
Academic Affairs and Provost

Recommended on 6/15, 2021
to the Board for approval by

Ora Hirsch Pescovitz, M.D.
President

06/07/21

OAKLAND UNIVERSITY **Graduate Education**
GRADUATE COUNCIL **520 O'Dowd Hall**

Modify Approved Graduate Academic Program

The Graduate Council approves all major curriculum changes, deletions and additions to graduate certificate, graduate degree and doctoral degree programs. Proposals and other actions pertaining to policies and procedures governing graduate education must be approved by the Council and then submitted to the Provost, Senate and Board, as applicable, for approval.

Academic units, modifying the curriculum of an existing graduate program or renaming, merging or splitting a program must submit a proposal to Graduate Council for review and approval. Major program modifications include course deletions or additions that change the nature of the program, or distribution of courses in the program, or change of total credit hours required.
Please complete this brief proposal and submit an electronic copy to **Claire Rammel@oakland.edu.**

☐ merge programs ■ split program ☐ rename program ☐ modify program

Effective Term/Year **Fall 2021**
Name of Current Program(s) **Master of Science in Information Technology Management (MSITM)**
Name of Proposed Program(s) **Master of Science in Business Analytics**
Department **Decision and Information Sciences**
College/School **School of Business Administration**

I certify that the above proposal has been reviewed and approved by the appropriate Department and College/School committees:

Vijayan Sugumaran — 3/1/2021 — Vijayan Sugumaran

Dept Chair or Director (signature) | Date | Dept Chair or Director (print)

Michael A. Mazzeo — 3/15/2021 — Michael A. Mazzeo

Dean of College/School (signature) | Date | Dean of College/School (print)

DECISION OF GRADUATE COUNCIL | Date

1. **List proposed program changes related to merging, splitting, renaming or modifying a program.**

   1.1 Current academic program(s)

   Master of Science in Information Technology Management (MSITM)

   1.2 Proposed modification to current program (brief description)

   Split the Business Analytics Concentration from the existing MSITM program and create a separate program – Master of Science in Business Analytics (MSBA).

2. **Describe the reason(s) for the proposed change.**

   a) Oakland University does not have a graduate degree specific to data analytics/business analytics/data science. Employers are specifically looking for graduates from an analytics degree program. Currently, MSITM students are being disadvantaged since their degree does not explicitly say that their degree is focused on Business Analytics. Instead, it is just a concentration within the MSITM degree, though the amount of course work being done in this concentration is comparable to a complete degree in business analytics. For Oakland University students who are seeking a career in the analytics area, it is an uphill battle since students from surrounding universities receive a degree in business analytics. This makes our students less competitive, though they are acquiring all the necessary analytics skills in their MSITM-BA program. Basically, the MSITM degree doesn't include "Business Analytics" in the title and hence doesn't have the name recognition that employers are looking for. A separate MSBA program would greatly help our students to be more competitive and launch successful careers in the analytics area.

   b) The MSBA program will be stronger and more competitive since it is focused on Business Analytics with more depth (18 credits of Analytics Courses and 3 credits from the IT Core – MIS 5460: Business Analytics). The name of the degree and the course offerings will be readily recognizable by all external stakeholders (prospective students, employers, and collaborators). Hence, this program will be more attractive and positively impact the enrollment.

   c) The school of Business Administration hired Eduvantis, a Higher Education Consulting and Digital Marketing company to conduct a market analysis for the graduate programs offered by SBA and one of their recommendations is to split the Business Analytics concentration from the MSITM program and create a separate Masters program in Business Analytics. According to their market analysis, this will attract more students into the program. Currently, since OU doesn't have any graduate programs in Analytics, we are losing out on potential students who are joining neighboring universities that offer an analytics degree. See Appendix A for specific information from Eduvantis.

   d) Students searching the Oakland University website for data analytics/data science/business analytics type programs don't find any programs being offered at OU. Unless students dig deeper into the MSITM program by chance (which most prospective students probably won't do), they will be disappointed that there are no analytics related graduate programs offered at Oakland University.

e) There is significant demand for Business Analytics professionals. There are a large number of jobs available and employers are not able to find qualified people to meet their needs. OU students with the MSBA degree will be able to readily take up these jobs and embark on successful careers in analytics. See Appendix B for information from Ad Astra and Appendix C for information gleaned from Burning Glass regarding business analytics related jobs and industries.

f) The MSBA program will be STEM coded. This will be attractive for international students since they can have three years of practical training after completing the degree. There is considerable demand for STEM coded Business Analytics programs from international students. Hence, this program has the potential to attract many international students and increase graduate enrollment. This will greatly support the University's goal of increasing graduate enrollment in the next few years.

3. Current program(s) requirements. (admission requirements, program requirements, course offerings, delivery method and advising structure).

The current program requirements are taken directly from the course catalog information that is posted on the SBA website for the MSITM program.

Degree requirements

The Master of Science in Information Technology Management degree program requires a minimum of 30 credits.

Course requirements

a. Preparatory course

- **MIS 3050 - Information Technology Foundations (3 credits)**

b. Foundation courses

- MIS 5240 - Enterprise Information Systems **(3 credits)**
- QMM 5100 - Quantitative Methods for Managers **(3 credits)**

Note: Preparatory and foundation courses are required for students who lack information systems and basic statistics (for Business Analytics Concentration) background. Students may be waived from these courses.

c. IT core courses (9 credits)

- MIS 5140 - Introduction to Databases and Data Warehousing **(3 credits)**

and

- MIS 5150 - Systems Analysis and Design **(3 credits)**

or

- MIS 5460 - Business Analytics **(3 credits)**

or

- MIS 5170 – Practical Cyber Security Fundamentals **(3 credits)**

and

- MIS 5160 - Software Program and Project Management **(3 credits)**

Note: MSITM students who are waived from any core courses must select other graduate business electives to fulfill their 30-credit program.

d. Electives: Concentrations or General Focus (18 credits)

After a student has built a solid foundation, they will be able to choose 18 credits from a host of electives offered by the Department of Decision and Information Sciences on emerging information technologies and topics of contemporary interest. Other electives from related disciplines may be considered with the approval of the program director. MSITM students wanting a more structured set of electives can select from one of two concentrations. A single class may not be counted toward more than one concentration.

Choose electives from one of the following concentrations or the general focus:

Business Analytics Concentration

Required course

- MIS 5560 – Introduction to Data Science **(3 credits)**

Choose four courses from the following:

- MIS 5470 - Practical Computing for Data Analytics **(3 credits)**
- MIS 5500 - Web Analytics **(3 credits)**
- MIS 6060 - Advanced Databases and Big Data Management **(3 credits)**
- POM 5410 - Operations Analytics **(3 credits)**
- QMM 5520 – Forecasting (3 credits)
- QMM 6400 - Management Science **(3 credits)**
- MIS 6900 – Special Topics in Management Information Systems (3 credits)
- Electives from related disciplines (with prior approval)

Additional credits

Additional courses from the above list or any prior approved electives must be taken to meet the remaining 9 credits required for the degree.

Information Security Management Concentration

Required courses

- MIS 5180 - IS Risk Analysis and Security Controls Development **(3 credits)**
- MIS 5700 - IS Security **(3 credits)**

Choose one course from the following

- MIS 5630 Introduction to Networks (3 credits)
- MIS 5640 - Network and Security Management **(3 credits)**
- MIS 5760 - Mobile Security Secure Application Development **(3 credits)**
- MIS 6120 - Information Security Legal Compliance and Ethics **(3 credits)**
- MIS 6410 - IS Privacy **(3 credits)**
- MIS 6430 - Intellectual Property and the Public Domain in the Age of Remix **(3 credits)**
- CSI 5480 - Information Security Practice **(4 credits)**
- MIS 6900 – Special Topics in Management Information Systems (3 credits)
- Electives from related disciplines (with prior approval)

Additional courses from the above list or any prior approved electives must be taken to meet the remaining 9 credits required for the degree.

General Focus - Information Systems Strategy and Management

Choose six courses from the following:

- MIS 6200 - Electronic Commerce **(3 credits)**
- MIS 6220 - Business Object Development **(3 credits)**
- MIS 6250 - IT Planning and Strategy **(3 credits)**
- MIS 6300 - Managing Global Outsourcing of IT and IT Enabled Services **(3 credits)**
- MIS 6380 - Knowledge Management **(3 credits)**
- MIS 6430 - Intellectual Property and the Public Domain in the Age of Remix **(3 credits)**
- MIS 6480 - Issues in International Information Technology **(3 credits)**
- MIS 6900 - Special Topics in Management Information Systems **(3 credits)**
- Other MIS electives or electives from related disciplines (with prior approval)

e. Capstone course (3 credits)

All students are required to complete this course. The project seminar provides students an opportunity to integrate the concepts in the MSITM program.

- MIS 6940 - Project Seminar **(3 credits)**

4. Proposed change to the program. (admission requirements, program requirements, course offerings, delivery method and advising structure).

Modification: Splitting the MSITM Business Analytics concentration and creating a separate graduate program in Business Analytics – Master of Science in Business Analytics (MSBA). The admission requirement, program requirements, course-offerings, delivery method and advising structure will all remain the same. No new courses are required. In essence, the structure of the MSBA program is exactly the same as the MSITM Business Analytics concentration. The proposed new program details are given below.

Degree requirements

The Master of Science in Business Analytics degree program requires a minimum of 30 credits.

Course requirements

a. Preparatory course

- **MIS 3050 - Information Technology Foundations (3 credits)**

b. Foundation courses

- MIS 5240 - Enterprise Information Systems **(3 credits)**
- QMM 5100 - Quantitative Methods for Managers **(3 credits)**

Note: Preparatory and foundation courses are required for students who lack information systems and basic statistics background. Students may be waived from these courses based on prior course work.

c. IT core courses (9 credits)

- MIS 5140 - Introduction to Databases and Data Warehousing **(3 credits)**
- MIS 5460 - Business Analytics **(3 credits)**
- MIS 5160 - Software Program and Project Management **(3 credits)**

Note: MSBA students who are waived from any core courses must select other graduate analytics courses to fulfill their 30-credit program.

d. Business Analytics Courses (18 credits)

After a student has built a solid foundation, they will be able to choose 18 credits from a host of business analytics courses offered by the Department of Decision and Information Sciences on emerging analytics tools and technologies and topics of contemporary interest. Other data analytics courses from related disciplines may be considered with the approval of the program director.

Required course

- MIS 5560 – Introduction to Data Science **(3 credits)**

Choose five courses from the following:

- MIS 5470 - Practical Computing for Data Analytics **(3 credits)**
- MIS 5500 - Web Analytics **(3 credits)**
- MIS 6060 - Advanced Databases and Big Data Management **(3 credits)**
- POM 5410 - Operations Analytics **(3 credits)**
- QMM 5520 – Forecasting (3 credits)
- QMM 6400 - Management Science **(3 credits)**
- MIS 6900 – ST: Deep Learning and Text Analytics **(3 credits)**
- MIS 6900 – ST: Social Network Analysis **(3 credits)**
- MIS 6900 – ST: Advanced Analytics with Python **(3 credits)**

- MIS 6900 – Other Special Topics in Management Information Systems **(3 credits)**
- Graduate Electives from related disciplines (with prior approval)

e. Capstone course (3 credits)

All students are required to complete this course. The project seminar provides students an opportunity to integrate the concepts in the MSITM program.

- MIS 6940 - Project Seminar **(3 credits)**

5. Provide a list of all new courses and deleted courses. Identify and label the course as core, focus (concentration, depth) elective or exit requirement.

No courses are being added or deleted.

5.1 Do any of the courses being deleted affect other degree programs?

No courses are being deleted.

6. If any resources needed (personnel, FTE academic, facilities or equipment) please provide budget. If no resources required, please provide a statement in the proposal.

Initially, the current MSITM Faculty Director will support the MSBA program. However, over time, as the MSBA program grows, there may be a need for a dedicated Faculty Director for the MSBA program.

7. Funding sources: state sources, federal funds, and other funds as specified.

Not applicable

8. If the program is professionally accredited, identify the accrediting body and discuss how the proposed change may affect accreditation.

The School of Business is AACSB accredited. Improvements such as those proposed should be viewed quite favorably by AACSB.

9. Impact on current students, enrollment, time-to-degree, target audience, faculty workload, etc.

Current students in the MSITM Business Analytics concentration will be transferred to the MSBA program since the course requirements are exactly the same. So, the current students will not be negatively impacted.

The MSBA program will be perceived to be stronger and more competitive since it is focused on Business Analytics with more depth (18 credits of Analytics Courses and 3 credits from the IT Core – MIS 5460: Business Analytics). The name of the degree reflects this. Hence, this program will be more attractive and positively impact the enrollment.

Time to degree will not be affected since we are **not** adding any new courses or increasing the number of credits required for graduation. The MSBA program will require 30 credits similar to the old MSITM-BA concentration. The MSBA program will be streamlined and will have name recognition. This will greatly help the students with career prospects and become competitive.

It is anticipated that the MSBA program will be appealing to a broader audience because of the recognizable name of the degree, strength of the courses offered, and career prospects.

Students enrolled in the Graduate Certificate in Business Analytics can continue on with the MSBA program by getting admitted into the program and completing the rest of the degree requirements, basically taking the remaining five courses.

Faculty workload will not be affected.

10. Provide explanation for how students enrolled in the program prior to effective date of any curriculum change may complete their program under old requirements – if so desired. The courses required must remain available, or suitable substitutions specifically designated.

Current students can easily complete the program under the old rules since no courses are being deleted. They can meet the graduation requirements for the MSITM degree with the Business Analytics concentration based on the requirements that were in effect when they joined the program. However, it will be beneficial for the students to transfer to the MSBA program because of the recognizable degree name. This will make the graduates more competitive and employers will readily relate to the program and the skillsets that students will acquire. It paves the way for our students to launch a successful career in Business Analytics.

Once the current students enrolled in the MSITM degree with the Business Analytics concentration graduate or transfer to the MSBA program, this concentration will be discontinued. The MSITM degree will continue to offer the existing concentrations in: 1) Information Security Management; 2) information Systems Strategy and Management; and 3) General Focus. In other words, the MSITM Business Analytics concentration will be phased out over a period of time and new students will join the MSBA program.

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WWW.EDUVANTIS.COM

Oakland University
School of Business Administration
Growth Opportunity Assessment

Appendix A

Last year, the SBA hired Eduvantis to conduct a market analysis and growth opportunity assessment for all the Graduate Programs that SBA offers. While the MSITM program is doing reasonably well, they have identified that the local growth for the program will be very limited. However, they have shown that there is a tremendous demand for the Data Science and Analytics (DSA) programs and jobs. The number of searches for MSBA programs locally and nationally has increased dramatically (slide 29). Detroit ranks 16th in the nation among cities with strongest demand for DSA jobs (slide 31). Michigan ranks 14th among the states seeking DSA professionals (slide 32). Students who declined admission to the MSITM program are joining neighboring universities that offer Analytics programs (slide 34). OU's tuition rate is much lower compared to our competition and if we offer the MSBA program, we will be able to attract many more students both locally and internationally (slide 35). Eduvantis concludes that there is limited market for technical management degrees such as MSITM. However, there is high demand for more tactical technical degrees leading to DSA careers (MSBA) (slide 37).

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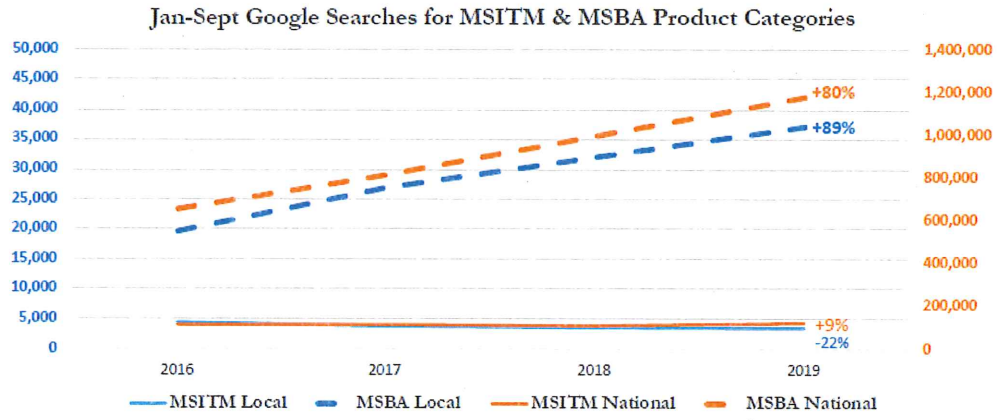
MSBA searches are dramatically outpacing MSITM searches both locally and nationally



Eduvantis
Oakland University

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Detroit among the cities with strongest demand for DSA jobs

Top 20 Metro Areas with Largest Volume of DSA Postings							
Rank Position	Location	Data System Developers	Data-Driven Decision Makers	Analytics Managers	Data Analysts	Functional Analysts	Data Scientists & Advanced Analysts
1	New York, NY	50,311	92,865	7,347	13,855	84,389	[illegible]
2	San Francisco, CA	22,705	43,529	2,478	6,931	30,662	[illegible]
3	Los Angeles, CA	27,408	42,411	1,590	6,016	35,106	[illegible]
4	Chicago, IL	25,028	42,008	2,145	6,691	40,731	[illegible]
5	Washington D.C.	37,510	30,448	1,801	5,555	40,478	[illegible]
16	Detroit, MI	12,117	12,708	512	2,460	13,470	[illegible]

MSITM MSBA

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Oakland University

SOURCE: The Quant Crunch: A study conducted by Burning Glass, IBM and the Business Higher Education Forum

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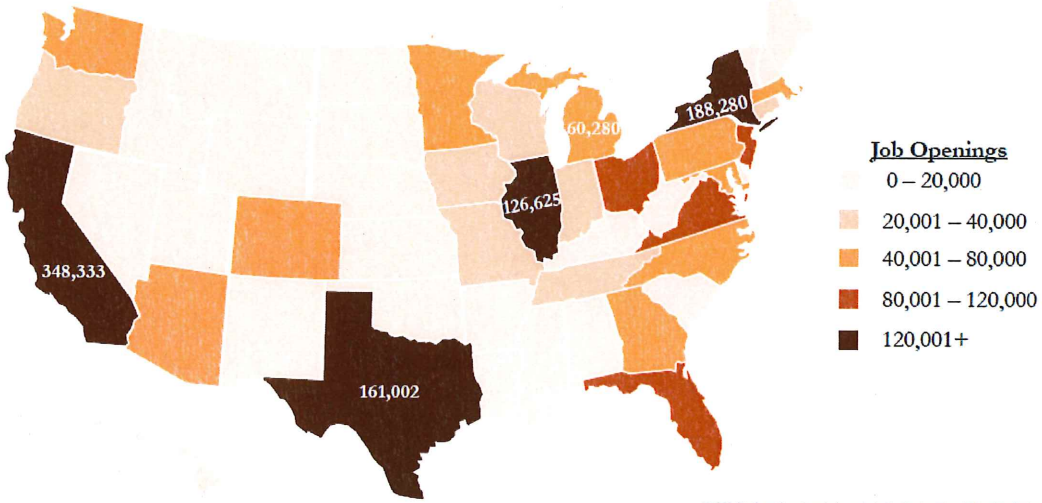
Michigan 14th among states seeking DSA professionals*



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Oakland University

SOURCE: The Quant Crunch: A study conducted by Burning Glass, IBM and the Business Higher Education Forum

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Strong need for trained DSA candidates

DSA Framework Category	Postings Requesting at least 3 years prior work experience	Postings Requiring Master's or Higher
Data Systems Developers	84%	3%
Analytics Managers	94%	11%
Data-Driven Decision Makers	88%	5%
Data Analysts	76%	6%
Functional Analysts	71%	6%

"Exacerbating the talent shortage for many DSA roles are the heightened education and experience requirements for many new and emerging positions.

The strong demand for experienced candidates, combined with the strong growth of many DSA roles, creates a chicken-and-egg problem within the DSA job market: there aren't many opportunities for workers to gain the DSA-related experience that employers are requesting"

	Data Systems Developers	Analytics Managers	Data Driven Decision-makers	Data Analysts	Functional Analysts
Michigan Total	16,436	671	20,119	3,237	19,817
Experie-nced	13,806	631	17,705	2,460	14,070
Master's positions	493	74	1,006	194	1,189

MSITM | MSBA

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Oakland University

SOURCE: The Quant Crunch: A study conducted by Burning Glass, IBM and the Business Higher Education Forum

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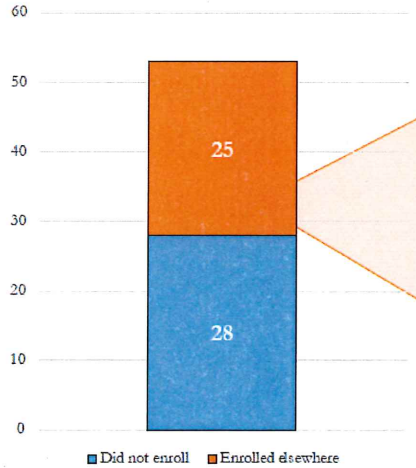
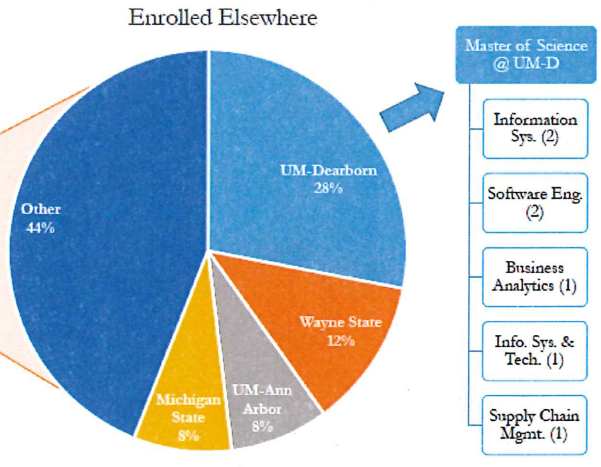
Students enrolling in a wide variety of programs as an alternative to the MSITM

Enrollment status of those who declined admission into OU's MSITM program



Schools attended by those who enrolled elsewhere



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Source: Inquiry/Application Data; Eduvantis Analysis

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Complex competitive environment includes multiple degree categories and offerings

Institution	Degree Name	Program Format	Delivery Model	Tuition	Min. Credits**	Capstone
Oakland	MS in IT Mgmt.	Full-Time One-year or 4+1	F2F	$23,100 (in) $30,810 (out)	30 credits	Required
Michigan State	MS in Accounting with specialty in Information Systems	FT One-Year	F2F	$28,800 (in) $51,870 (out)	30 credits	None
UM-Dearborn	MS in Information Systems	Part-Time or Full-Time One-Year	F2F, Hybrid	$27,240 (in) $41,910 (out)	30 credits	None
	MBA with concentration in IT Mgmt.	Part-Time Evenings	F2F	$32,688 (in) $50,292 (out)	36 credits	Required
Wayne State	MBA with concentration in Information Systems Mgmt.	PT Days & Evenings	F2F, Hybrid, Online	$27,468 (in) $55,080 (out)	36 credits	None

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Oakland University

Source: Program Websites

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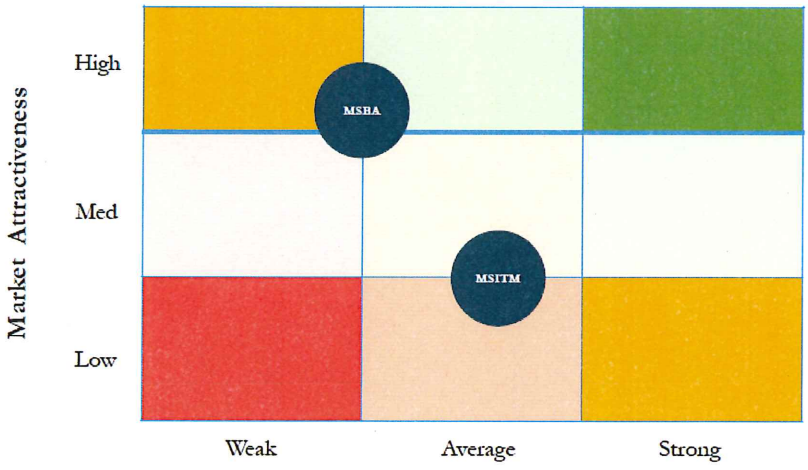
MSITM & MSBA program opportunity assessments



Program Opportunity

- Growing, but limited market for technical management degrees (MSITM)
- High demand for more tactical technical degrees leading to DSA careers (MSBA)
- Higher marketing costs for business/data analytics programs

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Oakland University

SOURCE: Eduvantis Analysis

Appendix B

John Barnshaw, Ph.D.
Vice President, Research and Data Science
Ad Astra, **jbarnshaw@aais.com**

Oakland University – Business Analytics

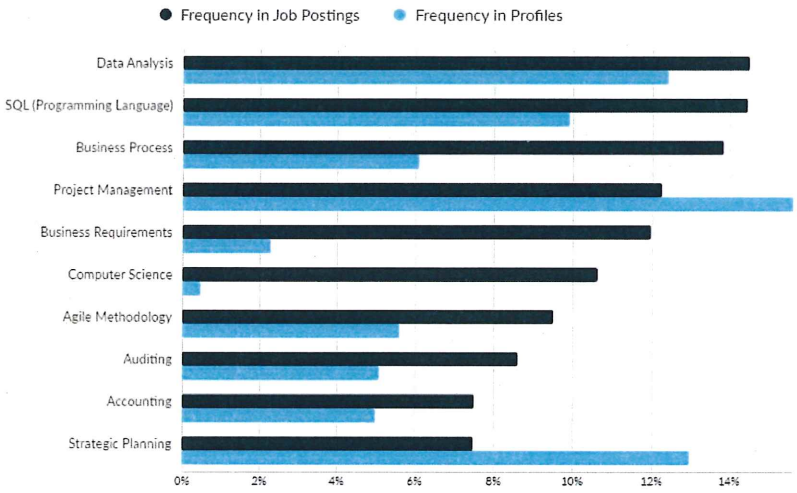
In-Demand Skills, Oakland Region

Top Hard Skills

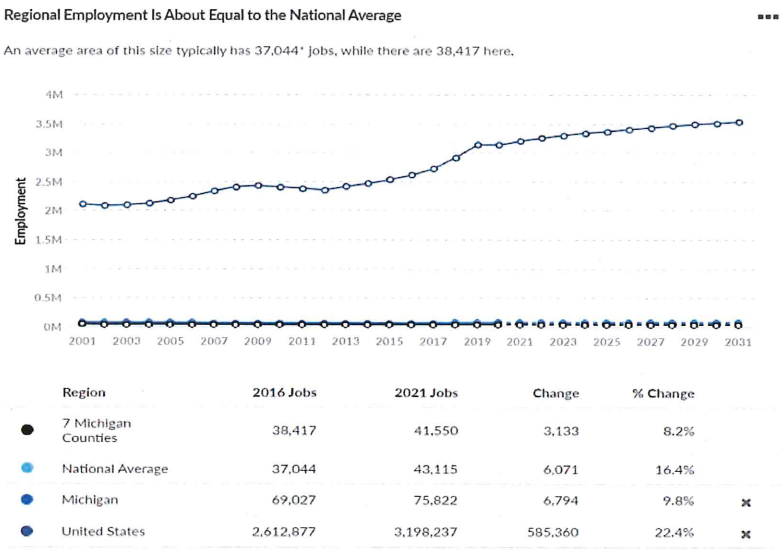
Skill	Frequency in Postings	Postings with Skill / Total Postings (Jan 2020 - Dec 2020)	Frequency in Profiles	Profiles with Skill / Total Profiles (2019 - 2021)
Data Analysis	22%	1,601 / 7,356	13%	3,439 / 25,947
SQL (Programming Language)	18%	1,331 / 7,356	9%	2,441 / 25,947
Business Process	16%	1,189 / 7,356	9%	2,223 / 25,947
Computer Science	15%	1,129 / 7,356	0%	104 / 25,947
Project Management	13%	989 / 7,356	19%	5,047 / 25,947
Business Requirements	13%	946 / 7,356	2%	563 / 25,947
Agile Methodology	12%	891 / 7,356	6%	1,503 / 25,947
Python (Programming Language)	10%	716 / 7,356	3%	736 / 25,947
Strategic Planning	9%	693 / 7,356	14%	3,638 / 25,947
Accounting	9%	638 / 7,356	5%	1,319 / 25,947
Data Science	9%	634 / 7,356	2%	648 / 25,947
Information Systems	8%	619 / 7,356	3%	768 / 25,947
Statistics	8%	619 / 7,356	1%	307 / 25,947
Auditing	8%	602 / 7,356	6%	1,504 / 25,947
Business Intelligence	8%	583 / 7,356	9%	2,349 / 25,947
Change Management	8%	572 / 7,356	8%	2,130 / 25,947
Forecasting	8%	569 / 7,356	5%	1,270 / 25,947
R (Programming Language)	6%	561 / 7,356	2%	498 / 25,947
SAS (Software)	7%	542 / 7,356	2%	431 / 25,947
Tableau (Business Intelligence Software)	7%	541 / 7,356	2%	478 / 25,947

- The Top 20 in-demand skills in the region offer a mix of general topics (Agile, Data Analysis) with specific tools (Python, SAS, Tableau).
- Consider emphasizing skills where gaps of in-demand skills are prevalent (red squares).

In-Demand Skills, United States



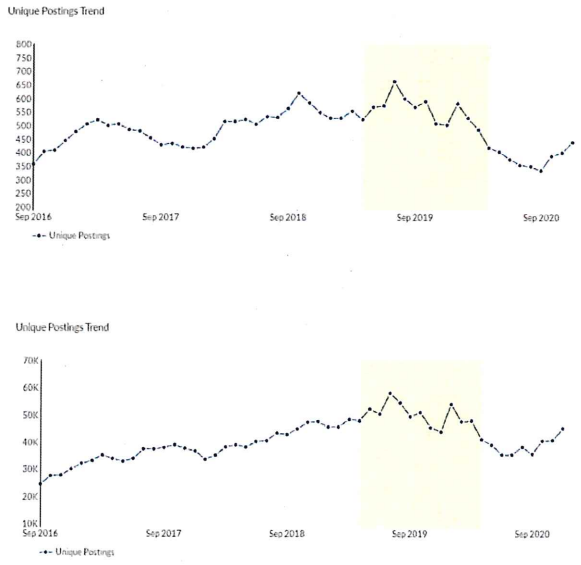
Labor Market Comparisons



Region	2016 Jobs	2021 Jobs	Change	% Change
7 Michigan Counties	38,417	41,550	3,133	8.2%
National Average	37,044	43,115	6,071	16.4%
Michigan	69,027	75,822	6,794	9.8%
United States	2,612,877	3,198,237	585,360	22.4%

- The business analytics field is projected to be among the fastest growing employment areas in the Oakland region.
- While the Oakland region has more jobs than a comparable region, a comparable region is projected to grow at a faster rate, signaling opportunity for students beyond the Oakland region.

Unique Job Postings



Although the number of unique job postings has not returned to pre-COVID levels, business analytics is a field that is leading the recovery with posting intensity increasing in the Oakland region (top) and nationally (bottom) with more than 45,000 unique postings in December 2020.

Top Employers, Oakland Region

Top Companies Posting

Company	Total/Unique (Apr 2019 - Apr 2020)	Posting Intensity	Median Posting Duration
Deloitte LLP	1,236 / 180	7 : 1	63 days
Anthem, Inc.	970 / 171	6 : 1	36 days
Ford Motor Company	753 / 138	5 : 1	59 days
Oracle Corporation	752 / 110	7 : 1	56 days
Accenture PLC	525 / 104	5 : 1	59 days
General Motors Company	302 / 46	7 : 1	38 days
Henry Ford Health System	201 / 42	5 : 1	50 days
Trinity Health Corporation	222 / 32	7 : 1	60 days
MCKINSEY & COMPANY	169 / 31	5 : 1	62 days
Fast Switch, Ltd.	266 / 30	9 : 1	34 days
Fiserv, Inc.	107 / 26	4 : 1	46 days
DTE Energy Company	200 / 25	8 : 1	42 days
Ally Financial Inc.	131 / 25	5 : 1	50 days
Humana Inc.	128 / 23	6 : 1	31 days
Flagstar Bancorp, Inc.	370 / 22	17 : 1	69 days
Pricewaterhousecoopers LLP	64 / 22	3 : 1	35 days
FCA Fiat Chrysler Automobiles	200 / 21	10 : 1	57 days
Teksystems, Inc.	196 / 21	9 : 1	23 days
Kforce Inc.	98 / 19	5 : 1	63 days

Generally, 4:1 is an average posting intensity with a median posting duration of 45 days.

Often, consulting firms such as Deloitte, Accenture and Kforce may be hiring on behalf of other employers.

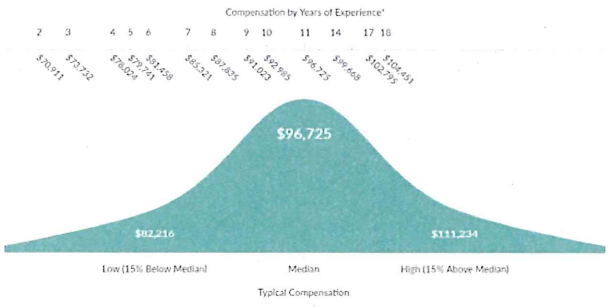
Healthcare (Anthem, Henry Ford, Trinity, Humana) and financial (Accenture, McKinsey, Ally, PWC) are strong employers in the region.

Consider internships, practicums, or concentrations in fields that offer a great number of employment opportunities.

Earnings, Oakland Region and United States

Typical Compensation Ranges From $82,216 to $111,234

Typical compensation for these workers in your area ranges from $82,216 to $111,234. The median wage is $96,725, which is about the same as the national median. When you adjust the median wage for regional cost of living (which is 5.8% below the average) workers "feel like" they make $102,680.



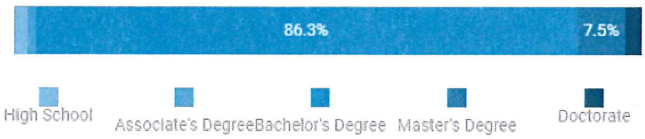
*Only the median compensation for each cohort is plotted. In reality, compensation for a cohort will range above and below the plotted point.

Region	10th Pct.	25th Pct.	50th Pct.	75th Pct.	90th Pct.
7 Michigan Counties	$58,224	$74,284	$96,725	$123,174	$158,312
Nation	$56,352	$74,016	$100,960	$135,264	$175,072
COL Adjusted 7 Michigan Counties	$61,809	$78,858	$102,680	$130,758	$168,059

- Approximately 70 percent of business analytics professionals earn between $82,216-$111,234 with a median salary of $96,725.
- Although earnings are lower than the national average, when factoring in cost-of-living adjustments, business analytics professionals the value of living in the Oakland region is approximately $1,720 more annually than other parts of the United States.

Appendix C
Information from Burning Glass
Business Analytics Related Jobs and Industries

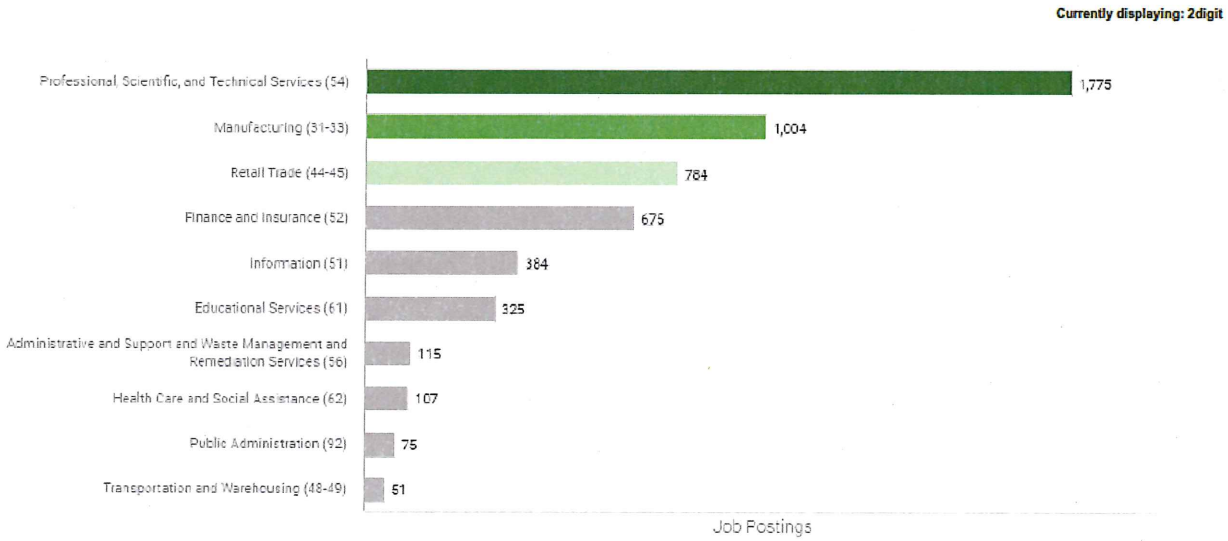
Education Level



Top Occupations Requesting Skill(s)

Occupation	Associated Education Level
Software Developer / Engineer	Bachelor's
Computer Systems Engineer / Architect	Bachelor's
Data Scientist	Bachelor's
Data Engineer	Bachelor's
Network Engineer / Architect	Bachelor's
Data / Data Mining Analyst	Bachelor's
Cyber / Information Security Engineer / Analyst	Bachelor's
Software QA Engineer / Tester	Bachelor's
Web Developer	Bachelor's
Database Administrator	Bachelor's

Top Industries



Top Occupations

Occupation	Total Job Postings (Last 12 Months)	Job Postings Requesting Skill(s)(#)	Job Postings Requesting Skill(s)(%)	Occupation Projected Growth (10 Years)	Salary Premium	Associated Education Level	Occupational Skills Category
Software Developer / Engineer	20,289	2,895	14.3%	31%		Bachelor's degree	Defining
Computer Systems Engineer / Architect	3,732	517	13.9%	8%		Bachelor's degree	Necessary
Data Scientist	666	465	69.8%	12.5%		Bachelor's degree	Defining
Data Engineer	666	407	61.1%	11.1%		Bachelor's degree	Defining
Network Engineer / Architect	3,231	360	11.1%	6.1%	✓	Bachelor's degree	Necessary
Data / Data Mining Analyst	1,473	315	21.4%	8%	✓	Bachelor's degree	Necessary
Cyber / Information Security Engineer / Analyst	2,490	298	12.0%	34.7%	✓	Bachelor's degree	Necessary
Software QA Engineer / Tester	2,212	244	11.0%	8%	✓	Bachelor's degree	Necessary
Web Developer	1,665	159	9.5%	12.6%		Bachelor's degree	Necessary
Database Administrator	1,923	147	7.6%	11.1%	✓	Bachelor's degree	Necessary

Top Employers