

*JUST HOW GOOD IS THAT ONLINE
MANAGEMENT PROGRAM COMPARED TO A
TRADITIONAL CAMPUS-BASED PROGRAM?*



PEREGRINE

Leadership Institute • Academic Services



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**A STATISTICAL COMPARISON OF US-BASED SCHOOL EXAM
RESULTS BASED ON PROGRAM DELIVERY MODALITY**

ABSTRACT

Opinions on the matter of education quality relative to program delivery modality vary, with all sides claiming to know best on how to deliver business programs to students. Such opinions, however, are typically based on assumptions or anecdotal evidence.

Quantitative data regarding retained student knowledge for US-based school based upon program delivery modality is presented. Peregrine Academic Services has provided over 150,000 program-level assessment exams to students completing online, blended, and traditional campus-based business degree programs.

Results are statistically compared using paired *t*-tests in order to bring facts and data into the discussions regarding the effectiveness of management education, as expressed by an assessment of retained knowledge using a nationally normed exam, based upon the delivery modality of the higher education program. Results showed statistically significant differences based on delivery modality with generally online program students outperforming their blended and traditional program counterparts.

AGENDA

- Higher Education Delivery Modalities and Terminology
- **What Other's Say: A Brief Literature Review**
- **Methods**
 - The Online Program Assessment Exam
 - Aggregate Pools
 - Statistical Methods
- **Results By Analysis Areas: Outbound Exam Scores and Inbound/Outbound Percent Change**
 - Traditional vs. Online
 - Traditional vs. Blended
 - Online vs. Blended
- **Summary & Conclusions**
 - Analysis Summaries
 - Considerations in Higher Education Program Delivery

HIGHER EDUCATION DELIVERY MODALITIES AND TERMINOLOGY

A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY



TERMINOLOGY (1 OF 3)

Higher Education Delivery Modality:

Traditional Program: The majority of the program is delivered at a campus location at an established college or university. The majority of the students are recent high school graduates, typically 18-22 years old. Courses are taught on a semester or quarter basis, typically Monday through Friday.

Blended Program: The program is delivered to students using a combination of online and campus-based instruction and/or the program is delivered in an accelerated format. The course term is typically 4 to 8 weeks. Campus-based instruction tends to be either at night or on weekends with generally longer sessions. The student population tends to be non-traditional, meaning they tend to be older, may have some college credit prior to starting their program, and are often working adults completing their degree program.

Online Program: The majority of the program is delivered online to students and there is little, if any, requirement for the students to go to a campus location any time during their college or university experience. The majority of the students are considered non-traditional, meaning they tend to be older, may have some college credit prior to starting their program, and are often working adults completing their degree program.

TERMINOLOGY (2 OF 3)

Program Assessment Exam: An exam that assesses retained knowledge of students upon graduation from an academic program that is most often used for learning outcomes evaluation, accreditation, and academic benchmarking.

Common Professional Component (CPCs): The 12 topic areas (15 with sub-topics) for business education as defined by the IACBE and the ACBSP and referred to as knowledge competency areas by the AACSB.

TERMINOLOGY (3 OF 3)

Inbound Exam: A student exam administered early in the student's program, usually during their first or second core course, that measures the student's knowledge level at the beginning of their academic program. (a.k.a. a program-level pre-test)

Outbound Exam: A student exam administered at the end of the student's academic program, usually within their last course, that measures the student's knowledge level at the end of their academic program. (a.k.a. a program-level post-test)

Percentage Change: The percentage change between the Inbound and Outbound exam scores. Percentage change is calculated using the following formula: $(\text{Outbound Score} / \text{Inbound Score}) - 1$.

ACADEMIC DEGREE PROGRAMS VS. ONLINE COURSES AND CERTIFICATE PROGRAMS?

The following analysis and results are based on students entering and completing academic degree programs in business and management from institutions of higher education.

These results DO NOT evaluate online MOOCs, open university, short courses, certificate programs, etc. Rather, we are comparing results of students who are attending an accredited college or university for degree completion purposes for either a bachelors in business (or related program) or a masters in business (or related program).

UNDERSTANDING THE STUDENT POPULATIONS REPRESENTED IN THE STUDY: **TRADITIONAL PROGRAMS**

Traditional program students:

- **Typically, these students are 18-25 years old, entering higher education directly from high school, and attending either a public or private university as full-time students attending classes 4-5 days per week.**
- **Who is paying for the education?** Often includes parents, scholarships, grants, military tuition assistance, part-time jobs, or a combination of strategies.

UNDERSTANDING THE STUDENT POPULATIONS REPRESENTED IN THE STUDY: **BLENDED PROGRAMS**

Blended program students:

- Typically, older students (25-Older), entering or most likely returning to higher education several years after high school in order to complete an academic degree program already in progress over several years or to start a higher degree program later in life.
- Attendance is usually part-time as most students are working adults.
- **Who is paying for the education?** The majority of the tuition is self-paid and/or employer sponsored. Some students use their military or some other tuition assistance program for a portion of the tuition fees.

UNDERSTANDING THE STUDENT POPULATIONS REPRESENTED IN THE STUDY: **ONLINE PROGRAMS**

Online program students:

- Typically, older students (25-Older), most likely returning to higher education several years after high school in order to complete an academic degree program already in progress over several years or to start a new higher degree program later in life.
- Attendance is mostly part-time as most students are working adults.
- **Who is paying for the education?** The majority of the tuition is self-paid and/or employer sponsored. Some students may use their military or some other tuition assistance program for a portion of the tuition fees.

DIFFERENTIATING THE STUDENT POPULATIONS REPRESENTED IN THE STUDY

The Differences:

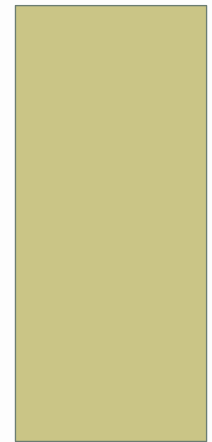
- **Motivational factors are different**
- **Who pays is different**
- **Mean ages are different**
- **Incentives for completing the program are different**
- **Time spent per term is different (full-time vs. part-time)**

The Commonalities:

- **All want a quality education**
- **All expect the educational experience to improve their knowledge areas and advance their opportunities, both personally and professionally**
- **All want to be recognized similarly, regardless of where they attended school**
- **All want value for the money spent**

WHAT OTHER'S SAY: A BRIEF LITERATURE REVIEW

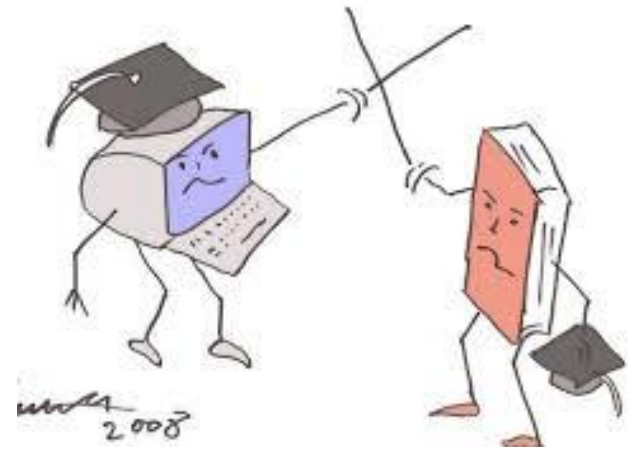
A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY



WHAT OTHERS ARE SAYING

One of the most heated debates in today's higher education landscape concerns the effectiveness between traditional and online college programs.

Online versus Traditional Schools From a Student's Perspective.



WHAT OTHERS ARE SAYING



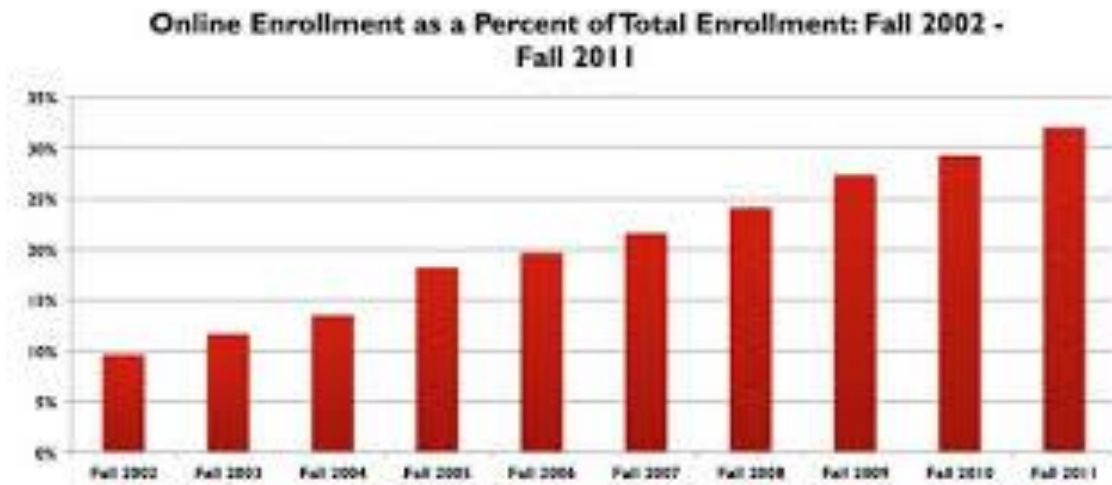
Only a third of the respondents rated online programs as “excellent” or “good,” while 68% gave excellent or good ratings to 4-year colleges and universities, and 64% gave such ratings to community colleges.

Gallup Survey, October 2013,

WHAT OTHERS ARE SAYING

With the rising cost of university tuition in America, it's fair to question whether the additional income you might earn with a college degree may actually offset the cost of the loans you need to pay for that degree. Perhaps the answer to the student debt problem is a better embracing of online education.

Why Online Learning is More Valuable Than Traditional College



WHAT OTHERS ARE SAYING

Researchers found that although nearly half of employers said online-only programs require more discipline, 56% said they still prefer applicants with traditional degrees from an average university over those with an online degree from a top university. Overall, most employers (82%) said a combination of in-person and online education would benefit the majority of students.

Employers, Students Remain Skeptical of Online Education

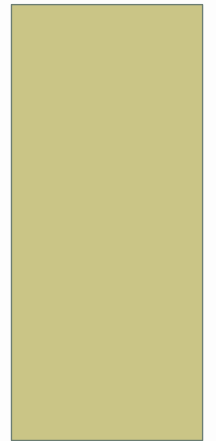
WHAT OTHERS SAY

William Bowen, President emeritus the Andrew W, Mellon Foundation and Princeton University, in his 2012 Tanner lecture, identified a “lack of hard evidence” in comparative analysis of the learning outcomes from online and on-campus learning.

Kelly Lack’s literature review in 2012 supported the statement noting that of the published and reviewed articles “most, if not all” has substantial limitations related to limited sample sizes and direct comparability based on delivery modality.

METHODS

A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY



THE PROGRAM-LEVEL ASSESSMENT EXAM

- The exam is customized by topic selection to align with the program of study
- **Different test banks used for undergraduate and graduate exams**
- 10 questions per topic
- **Most bachelors exams include all 12 topics (120 questions)**
- **Most graduate exams include 6-10 topics (60-100 questions)**

ADMINISTERING THE EXAM

- An online, randomized question selection exam
- Administered either as a homework assignment or as a proctored exam within a classroom
- Outbound exams incentivized to motivate the students to do their best on the exam (graded on a normed scale)
- Summative and comparative reports used for internal program evaluation and externally for academic benchmarking.

THE EXAM SAMPLE

- Exam results for the 2010-2014 academic years (July-June).
- Results segregated and summarized based on academic program delivery modality (traditional, online, and blended) – the aggregate pools.
- Sample (number of questions offered per topic), mean, and standard deviation calculated for each topic/subtopic for both bachelors and masters academic degree levels.

RESEARCH QUESTION AND HYPOTHESES

What, if any, differences exist with student exam results using a normed business program assessment instrument based upon the delivery modality (traditional, blended/hybrid, and online) of the academic program?

H_{0-1} : There is no significant difference of student program assessment exam scores between **traditional and blended** academic programs.

H_{A-1} : There are significant differences of student program assessment exam scores between **traditional and blended** academic programs.

H_{0-2} : There is no significant difference of student program assessment exam scores between **traditional and online** academic programs.

H_{A-2} : There are significant differences of student program assessment exam scores between **traditional and online** academic programs.

H_{0-3} : There is no significant difference of student program assessment exam scores between **blended and online** academic programs.

H_{A-3} : There are significant differences of student program assessment exam scores between **blended and online** academic programs.

DATA ANALYSES

Sample means for each Topic (*cannot perform for Total Score due to customization of the exam*) compared using the Student's t -test (Welch's t -test adaptation) to compare the samples having the possibility of unequal variances.

Welch's t -test defines the statistic t by the following formula:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$$

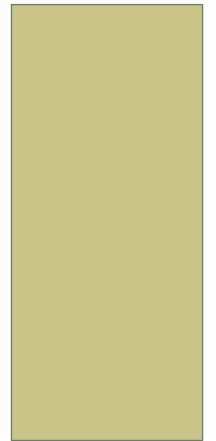
where \bar{X}_i , s_i^2 and N_i are the i^{th} sample mean, sample variance and sample size, respectively.

t Critical Two-tailed Test

$$t_{.200}=1.282 \quad t_{.100}=1.645 \quad t_{.050}=1.960 \quad t_{.020}=2.326$$

RESULTS

A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY



THE SAMPLES: NUMBER OF US-BASED SCHOOLS* AND NUMBER OF COMPLETED EXAMS (ACADEMIC YEARS 2010-2014)

Program Delivery Modality	<u>Bachelors</u>		<u>Masters</u>	
	Number of Schools and Exams in the Pool for Inbound Exams	Number of Schools and Exams in the Pool for Outbound Exams	Number of Schools and Exams in the Pool for Inbound Exams	Number of Schools and Exams in the Pool for Outbound Exams
Traditional	17 Schools 2,570 Exams	69 Schools 10,751 Exams	9 Schools 1,467 Exams	24 Schools 1,837 Exams
Blended	10 Schools 1,873 Exams	28 Schools 7,846 Exams	12 Schools 3,635 Exams	29 Schools 7,588 Exams
Online	9 Schools 7,620 Exams	21 Schools 10,293 Exams	12 Schools 8,800 Exams	20 Schools 11,582 Exams

*Schools are programmatically accredited by either ACBSP, IACBE, or AACSB.

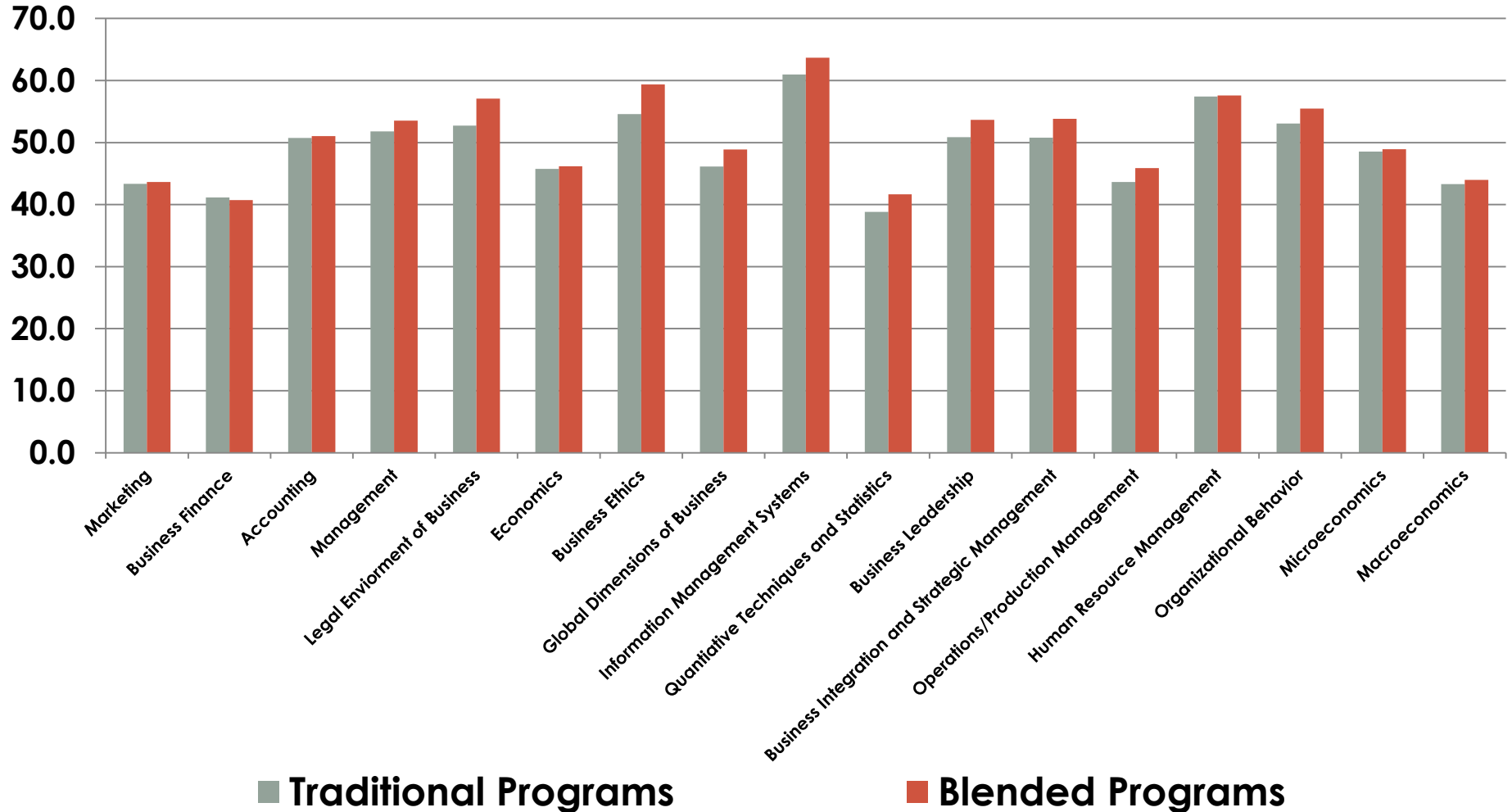
OUTBOUND EXAM RESULTS COMPARISONS

A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY

OUTBOUND EXAM SCORE COMPARISONS

TRADITIONAL PROGRAMS VS. BLENDED PROGRAMS

BACHELORS LEVEL



TRADITIONAL VS. BLENDED PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Bachelors Student Results	T-test Value
Marketing		3.486
Business Finance		4.705
Accounting		2.789
Management <small>(Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)</small>		17.925
Legal Environment of Business		41.846
Economics <small>(Includes the Subtopics of Macroeconomics and Microeconomics)</small>		4.453
Business Ethics		38.688
Global Dimensions of Business		27.666
Information Management Systems		23.424
Quantitative Techniques and Statistics		26.489
Business Leadership		29.192
Business Integration and Strategic Management		28.894
Operations/Production Management		15.500
Human Resource Management		1.250
Organizational Behavior		18.572
Microeconomics		3.263
Macroeconomics		5.960

OUTBOUND EXAM RESULTS FOR TRADITIONAL VS. BLENDED PROGRAMS: **BACHELORS**

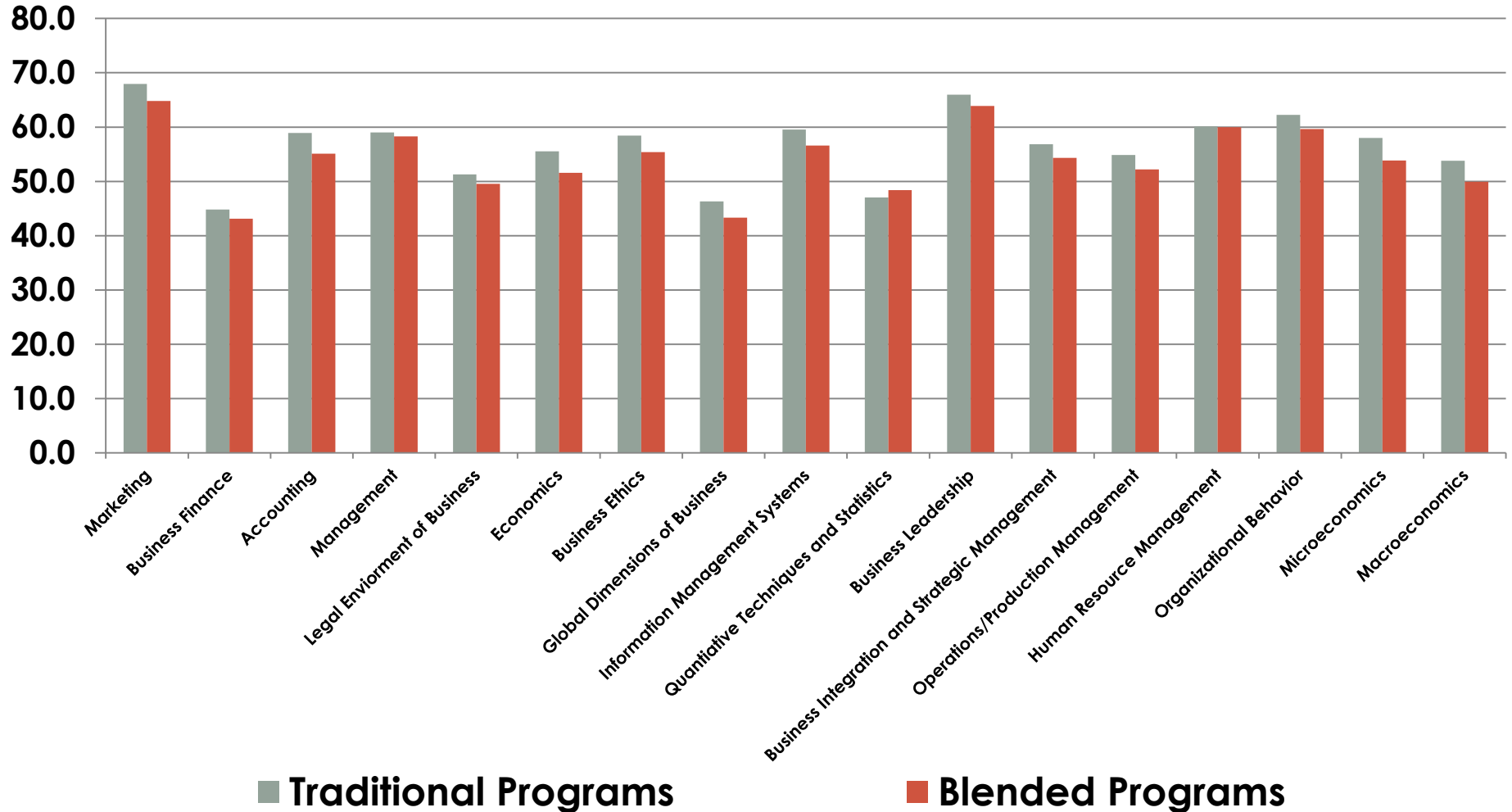
Average student scores on Outbound Exams for 15/17 topics were significantly ($p < 0.10$) lower for traditional program students compared to blended program students.

One score was significantly ($p < 0.10$) higher and one score was not significantly different.

OUTBOUND EXAM SCORE COMPARISONS

TRADITIONAL PROGRAMS VS. BLENDED PROGRAMS

MASTERS LEVEL



TRADITIONAL VS. BLENDED PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
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Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Masters Student Results	T-test Value
Marketing		20.183
Business Finance		10.110
Accounting		16.588
Management <small>(Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)</small>		4.544
Legal Environment of Business		4.983
Economics <small>(Includes the Subtopics of Macroeconomics and Microeconomics)</small>		20.887
Business Ethics		18.247
Global Dimensions of Business		16.839
Information Management Systems		13.045
Quantitative Techniques and Statistics		6.499
Business Leadership		11.813
Business Integration and Strategic Management		13.801
Operations/Production Management		8.949
Human Resource Management		0.605
Organizational Behavior		11.224
Microeconomics		19.572
Macroeconomics		17.135

OUTBOUND EXAM RESULTS FOR TRADITIONAL VS. BLENDED PROGRAMS: **MASTERS**

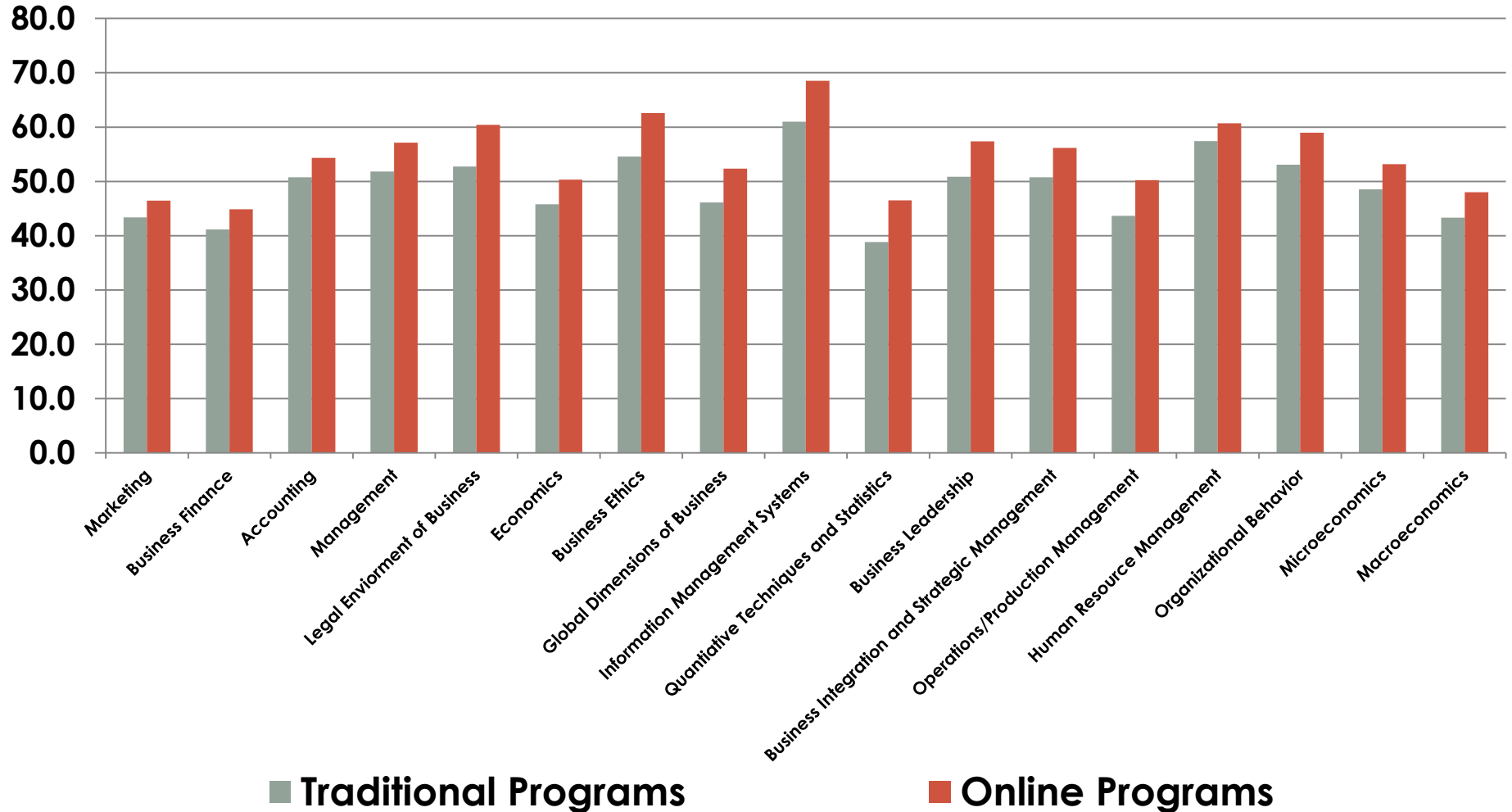
Average student scores on Outbound Exams for 15/17 topics were significantly ($p < 0.10$) higher for traditional program students compared to blended program students.

One score was significantly ($p < 0.10$) lower and one score was not significantly different.

OUTBOUND EXAM SCORE COMPARISONS

TRADITIONAL PROGRAMS VS. ONLINE PROGRAMS

BACHELORS LEVEL



TRADITIONAL VS. ONLINE PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

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Significantly Higher Mean of the First Item
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Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Bachelors Student Results	T-test Value
Marketing		38.984
Business Finance		41.639
Accounting		36.868
Management <small>(Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)</small>		58.680
Legal Environment of Business		78.036
Economics <small>(Includes the Subtopics of Macroeconomics and Microeconomics)</small>		51.256
Business Ethics		69.730
Global Dimensions of Business		65.341
Information Management Systems		68.755
Quantitative Techniques and Statistics		74.351
Business Leadership		66.402
Business Integration and Strategic Management		52.943
Operations/Production Management		47.671
Human Resource Management		25.135
Organizational Behavior		49.783
Microeconomics		40.947
Macroeconomics		45.267

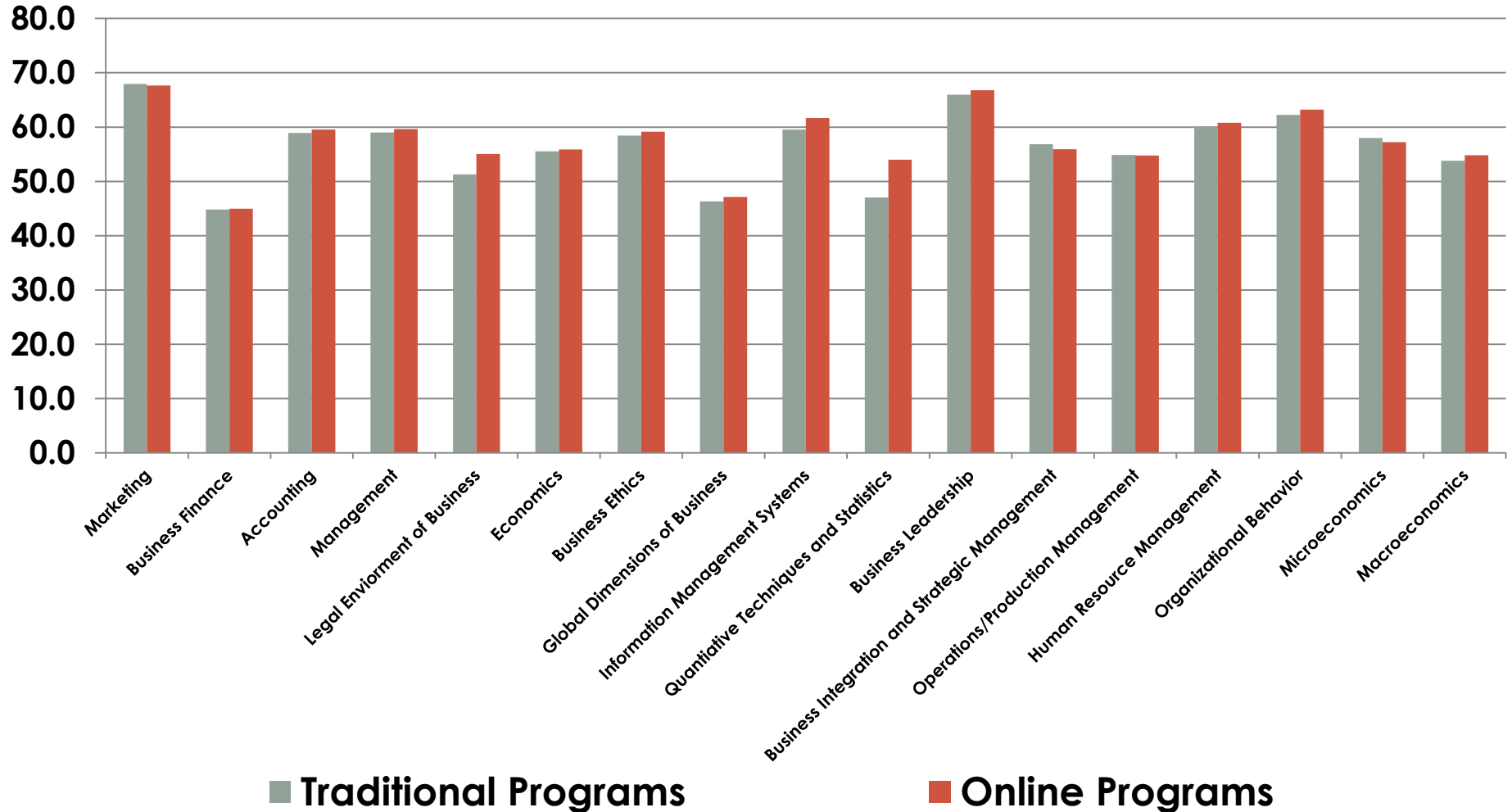
OUTBOUND EXAM RESULTS FOR TRADITIONAL VS. ONLINE PROGRAMS: **BACHELORS**

Average student scores on Outbound Exams for 17/17 topics were significantly ($p < 0.10$) lower for traditional program students compared to online program students.

OUTBOUND EXAM SCORE COMPARISONS

TRADITIONAL PROGRAMS VS. ONLINE PROGRAMS

MASTERS LEVEL



TRADITIONAL VS. ONLINE PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Masters Student Results	T-test Value
Marketing		2.210
Business Finance		0.948
Accounting		2.654
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		3.734
Legal Environment of Business		11.021
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		1.776
Business Ethics		4.636
Global Dimensions of Business		4.838
Information Management Systems		9.812
Quantitative Techniques and Statistics		32.511
Business Leadership		5.292
Business Integration and Strategic Management		5.173
Operations/Production Management		0.304
Human Resource Management		3.066
Organizational Behavior		4.367
Microeconomics		3.695
Macroeconomics		4.466

OUTBOUND EXAM RESULTS FOR TRADITIONAL VS. ONLINE PROGRAMS: **MASTERS**

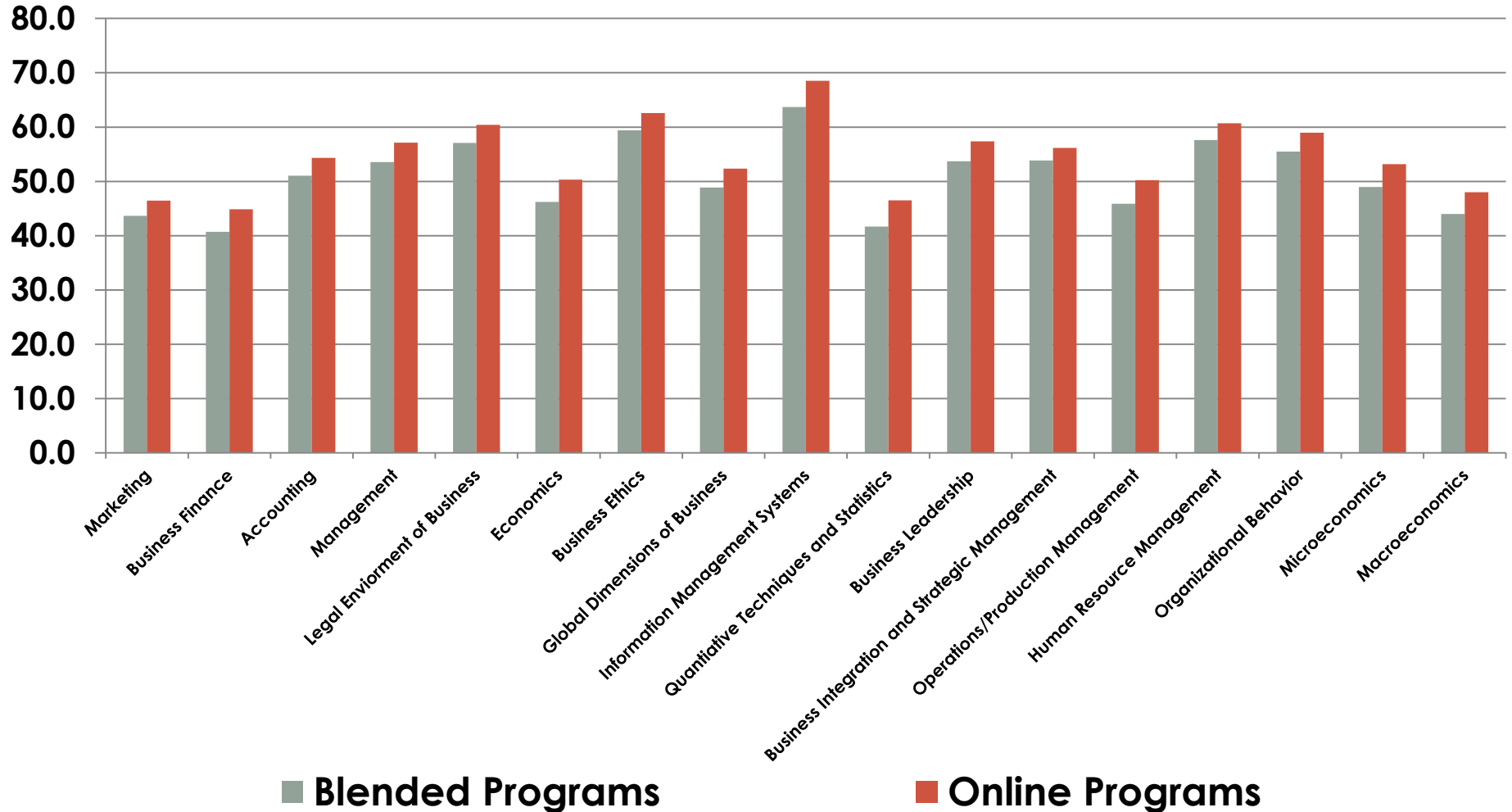
Average student scores on Outbound Exams for 12/17 topics were significantly ($p < 0.10$) lower for traditional program students compared to online program students.

Three scores were significantly ($p < 0.10$) higher and two scores were not significantly different.

OUTBOUND EXAM SCORE COMPARISONS

BLENDED PROGRAMS VS. ONLINE PROGRAMS

BACHELORS LEVEL



BLEND VS. ONLINE PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Bachelors Student Results	T-test Value
Marketing		34.373
Business Finance		45.783
Accounting		33.299
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		41.428
Legal Environment of Business		37.195
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		48.302
Business Ethics		29.104
Global Dimensions of Business		36.223
Information Management Systems		52.595
Quantitative Techniques and Statistics		44.981
Business Leadership		39.861
Business Integration and Strategic Management		23.676
Operations/Production Management		29.833
Human Resource Management		24.710
Organizational Behavior		27.465
Microeconomics		38.498
Macroeconomics		39.788

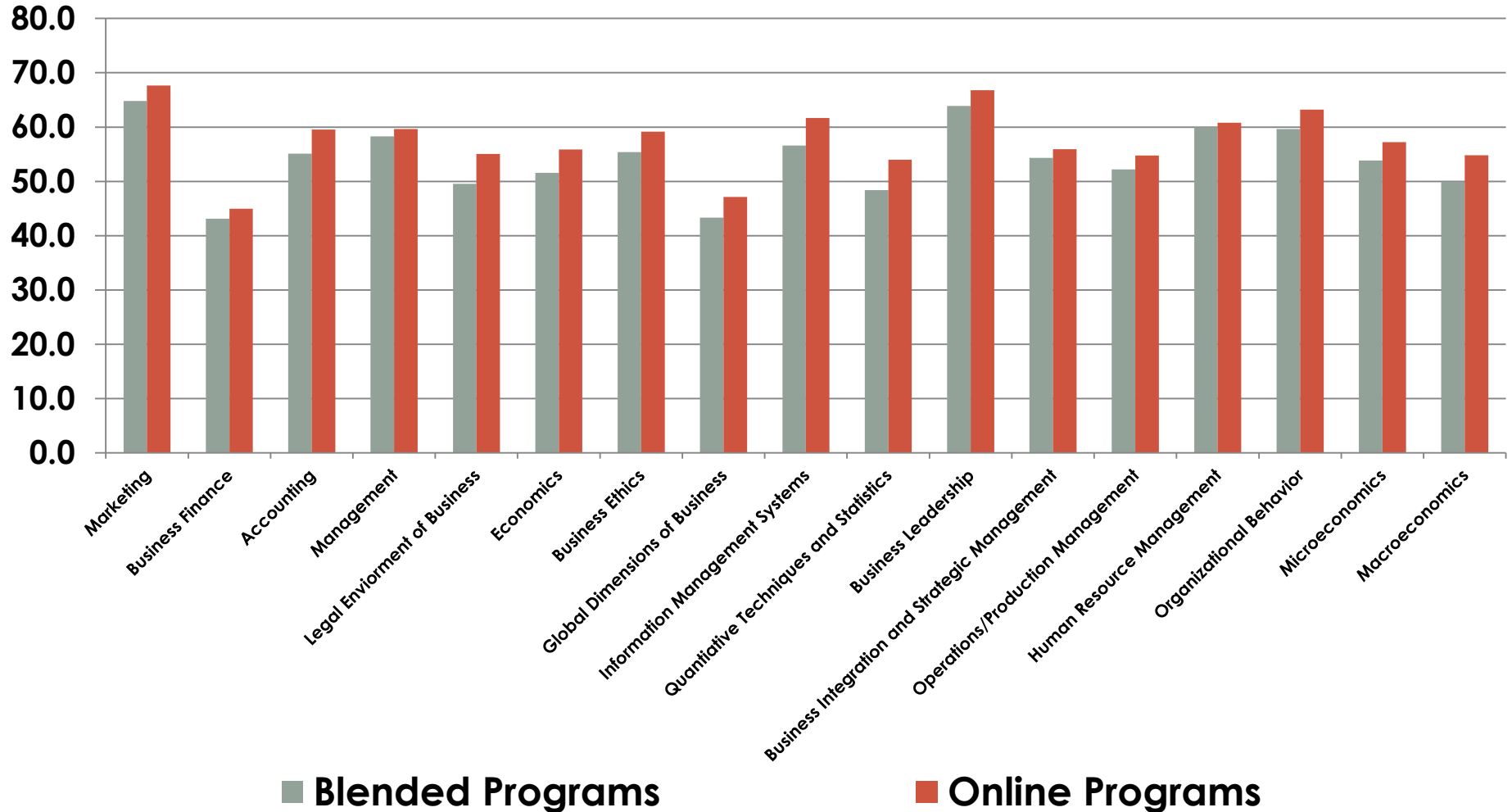
OUTBOUND EXAM RESULTS FOR BLENDED VS. ONLINE PROGRAMS: **BACHELORS**

Average student scores on Outbound Exams for 17/17 topics were significantly ($p < 0.10$) lower for blended program students compared to online program students.

OUTBOUND EXAM SCORE COMPARISONS

BLENDED PROGRAMS VS. ONLINE PROGRAMS

MASTERS LEVEL



BLEND VS. ONLINE PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Masters Student Results	T-test Value
Marketing		30.759
Business Finance		20.368
Accounting		37.189
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		14.645
Legal Environment of Business		53.089
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		42.902
Business Ethics		48.780
Global Dimensions of Business		34.838
Information Management Systems		45.411
Quantitative Techniques and Statistics		47.118
Business Leadership		27.883
Business Integration and Strategic Management		17.668
Operations/Production Management		13.996
Human Resource Management		5.713
Organizational Behavior		27.497
Microeconomics		25.691
Macroeconomics		44.044

OUTBOUND EXAM RESULTS FOR BLENDED VS. ONLINE PROGRAMS: MASTERS

Average student scores on Outbound Exams for 17/17 topics were significantly ($p < 0.10$) lower for blended program students compared to online program students.

**T-TEST ANALYSIS:
OUTBOUND EXAM SCORE COMPARISONS BY
TOPIC AND SUBTOPIC**

**A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY**

OUTBOUND EXAM SCORES

TOPIC: MARKETING

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,751	7,787	9,633	1,837	7,498	9,822
Mean	43.35	43.66	46.45	67.97	64.79	67.64
SD	6.50	5.69	4.80	5.94	6.48	5.94

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
3.5124	38.9844	34.3981

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
20.1829	2.1803	29.7179

OUTBOUND EXAM SCORES

TOPIC: BUSINESS FINANCE

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,711	7,814	10,083	1,811	7,558	9,853
Mean	41.16	40.72	44.84	44.81	43.12	44.96
SD	6.62	5.81	6.13	6.52	5.66	6.22

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.7347	41.6387	45.8819

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
10.1099	0.9480	20.3681

OUTBOUND EXAM SCORES

TOPIC: ACCOUNTING

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,633	7,795	10,233	1,751	7,164	8,652
Mean	50.76	51.05	54.35	58.93	55.08	59.54
SD	7.49	6.60	6.53	9.02	7.33	7.74

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
2.7531	36.8682	33.3718

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
16.5884	2.6542	37.1893

OUTBOUND EXAM SCORES

TOPIC: MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,718	7,846	10,293	1,658	7,575	11,592
Mean	51.813	53.531	57.124	59.028	58.266	59.620
SD	7.289	5.78	5.796	6.088	6.608	5.68

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
17.925	58.680	41.428

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.544	3.734	14.645

OUTBOUND EXAM SCORES

TOPIC: LEGAL ENVIRONMENT OF BUSINESS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,628	7,827	10,263	948	7,263	11,376
Mean	52.74	57.08	60.41	51.27	49.55	55.07
SD	8.12	5.96	5.94	10.38	6.36	7.72

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
41.8472	78.0460	37.2750

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.9861	11.0212	53.0986

OUTBOUND EXAM SCORES

TOPIC: ECONOMICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,681	7574	10,291	1,785	7,321	8,556
Mean	45.778	46.201	50.34	55.547	51.582	55.878
SD	7.161	5.655	5.667	7.562	6.445	6.103

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.453	51.256	48.302

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
20.887	1.776	42.902

OUTBOUND EXAM SCORES

TOPIC: BUSINESS ETHICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,735	7,767	9,963	1,756	7,438	11,563
Mean	54.58	59.39	62.61	58.41	55.41	59.16
SD	9.37	7.49	7.10	6.43	5.15	5.21

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
38.7555	69.7384	29.0273

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
18.2467	4.6296	48.7665

OUTBOUND EXAM SCORES

TOPIC: GLOBAL DIMENSIONS OF BUSINESS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,599	7,201	9,603	1,512	4,619	10,693
Mean	46.13	48.89	52.37	46.32	43.30	47.12
SD	7.20	6.02	6.36	5.96	6.37	5.87

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
27.7152	65.3307	36.1108

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
16.8333	4.8444	34.8384

$$t_{.100} = 1.645$$

OUTBOUND EXAM SCORES

TOPIC: INFORMATION MANAGEMENT SYSTEMS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,251	7,418	9,211	942	4,463	7,836
Mean	60.99	63.68	68.53	59.55	56.57	61.69
SD	9.26	5.99	5.83	6.40	6.21	5.63

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
23.4137	68.7459	52.5903

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
13.0450	9.8124	45.4110

OUTBOUND EXAM SCORES

TOPIC: QUANTITATIVE RESEARCH TECHNIQUES AND STATISTICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,388	7,113	9,481	1,546	6,813	7,067
Mean	39.91	42.55	46.55	47.00	48.40	53.98
SD	6.21	5.84	6.35	7.69	6.56	7.44

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
28.5794	74.2694	41.9822

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
6.6295	32.5121	46.9068

OUTBOUND EXAM SCORES

TOPIC: BUSINESS LEADERSHIP

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,152	7,204	9,001	1,735	4,564	10,626
Mean	50.85	53.66	57.37	65.97	63.90	66.80
SD	7.28	5.40	6.31	6.20	6.15	5.13

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
29.1513	66.4119	40.3658

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
11.8125	5.2916	27.8834

OUTBOUND EXAM SCORES

TOPIC: BUSINESS INTEGRATION AND STRATEGIC MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,459	7,777	9,301	1,811	7,588	10,903
Mean	50.77	53.82	56.14	56.83	54.32	55.93
SD	7.87	6.37	6.36	7.06	6.53	5.44

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
28.8724	52.9425	23.7123

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
13.8015	5.1727	17.6685

OUTBOUND EXAM SCORES

TOPIC: OPERATIONS/PRODUCTION MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	8,760	6,503	8,457	1,406	4,446	10,114
Mean	43.65	45.87	50.24	54.84	52.18	54.76
SD	9.01	8.59	9.12	9.33	10.90	8.63

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
15.4197	47.6711	30.0606

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
8.9492	0.3040	13.9956

OUTBOUND EXAM SCORES

TOPIC: HUMAN RESOURCE MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	9,072	6,700	8,613	1,586	4,692	10,869
Mean	57.43	57.60	60.70	60.11	59.96	60.79
SD	9.45	7.61	7.84	8.35	8.64	7.40

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
1.2576	25.1351	24.7022

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test
Significantly Lower Mean of the First Item Compared to the Second Item of the Paired <i>t</i> -test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
0.6087	3.0614	5.7127

OUTBOUND EXAM SCORES

TOPIC: ORGANIZATIONAL BEHAVIOR

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,321	7,545	9,963	1,393	6,811	9,833
Mean	53.07	55.49	58.97	62.23	59.64	63.20
SD	8.83	8.47	8.05	7.74	8.37	7.98

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
18.5463	49.7828	27.5043

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
11.2201	4.3675	27.4897

OUTBOUND EXAM SCORES

TOPIC: MICROECONOMICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,314	7,330	10,081	1,713	69,604	8,252
Mean	48.55	48.96	53.16	58.02	53.86	57.25
SD	8.94	7.21	7.03	7.84	8.06	8.14

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
3.3895	40.9471	38.2796

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
21.6944	3.6955	35.7606

OUTBOUND EXAM SCORES

TOPIC: MACROECONOMICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	10,409	7,454	10,201	1,785	7,275	8,556
Mean	43.33	44.00	48.00	53.82	49.95	54.81
SD	8.17	6.66	6.58	8.87	7.07	6.73

Paired <i>t</i> -Test Values: Bachelors Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
6.0181	45.2670	39.6802

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

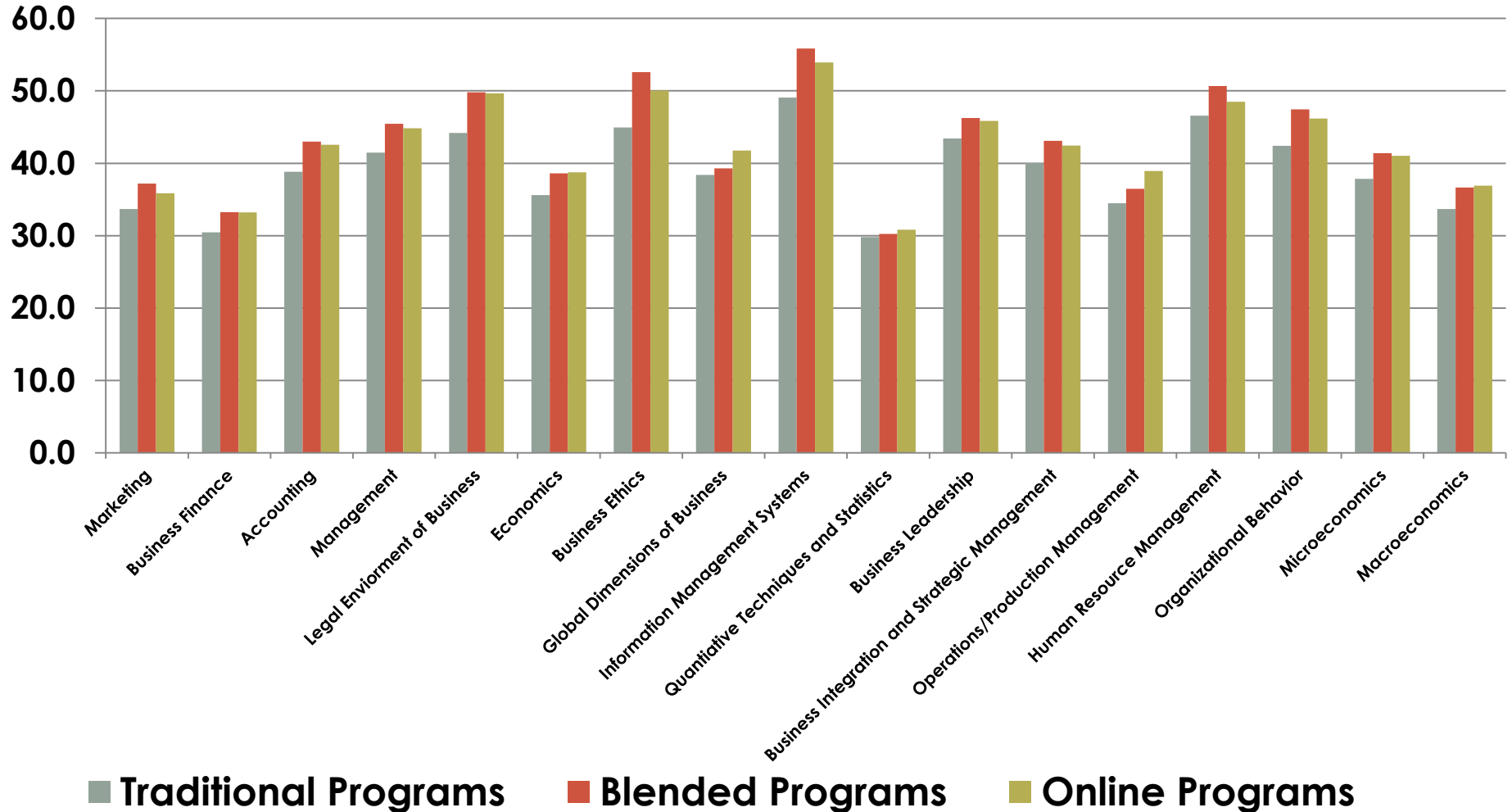
$$t_{.100} = 1.645$$

Paired <i>t</i> -Test Values: Masters Exam Scores		
<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
17.1303	4.4707	44.0443

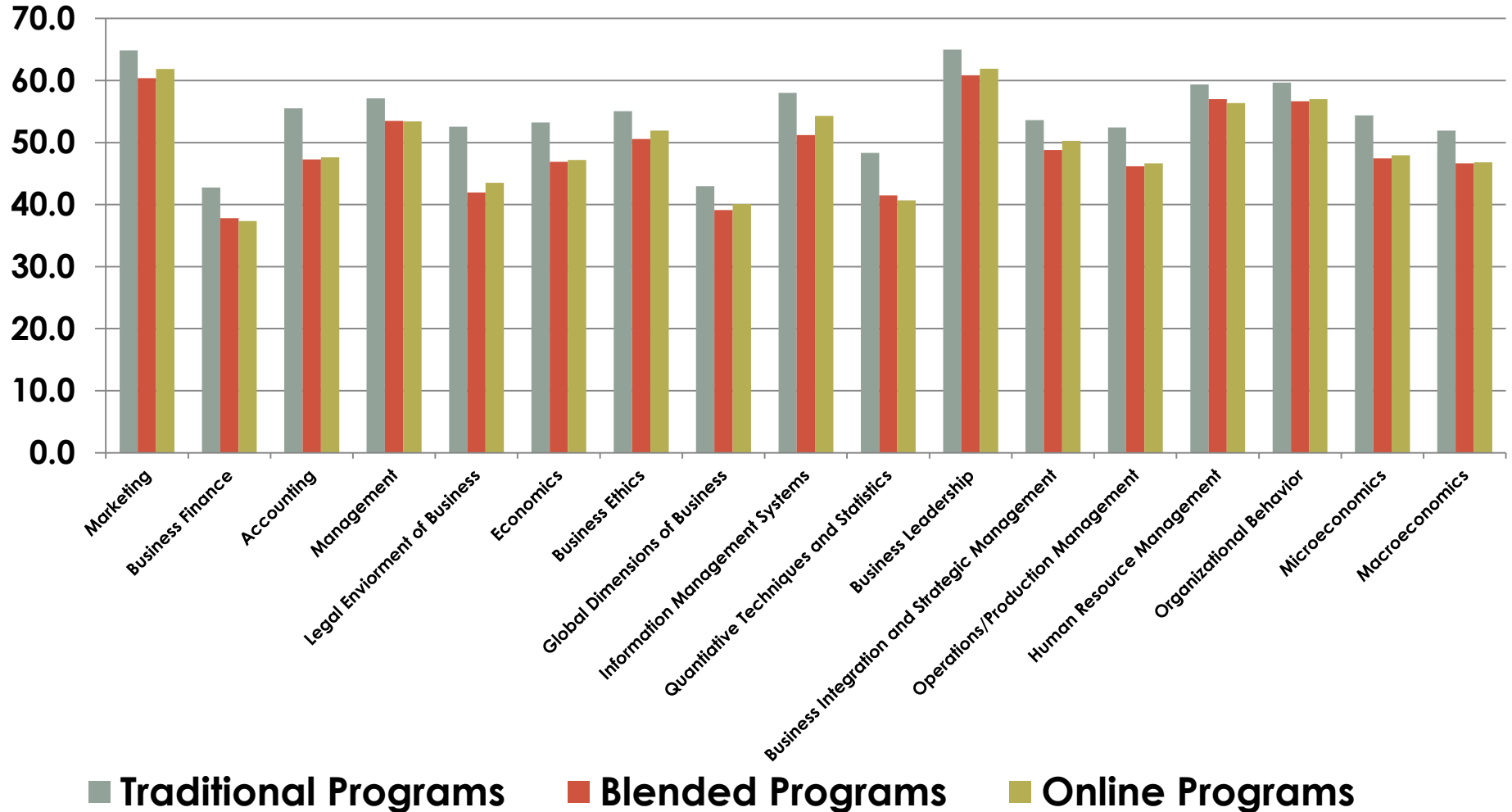
**INBOUND EXAM RESULTS COMPARISONS USED
TO ESTABLISH RELEVANCY OF THE PERCENT
CHANGE DATA**

**A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY**

INBOUND EXAM RESULTS: BACHELORS LEVEL



INBOUND EXAM RESULTS: MASTERS LEVEL



INBOUND EXAM RELEVANCY

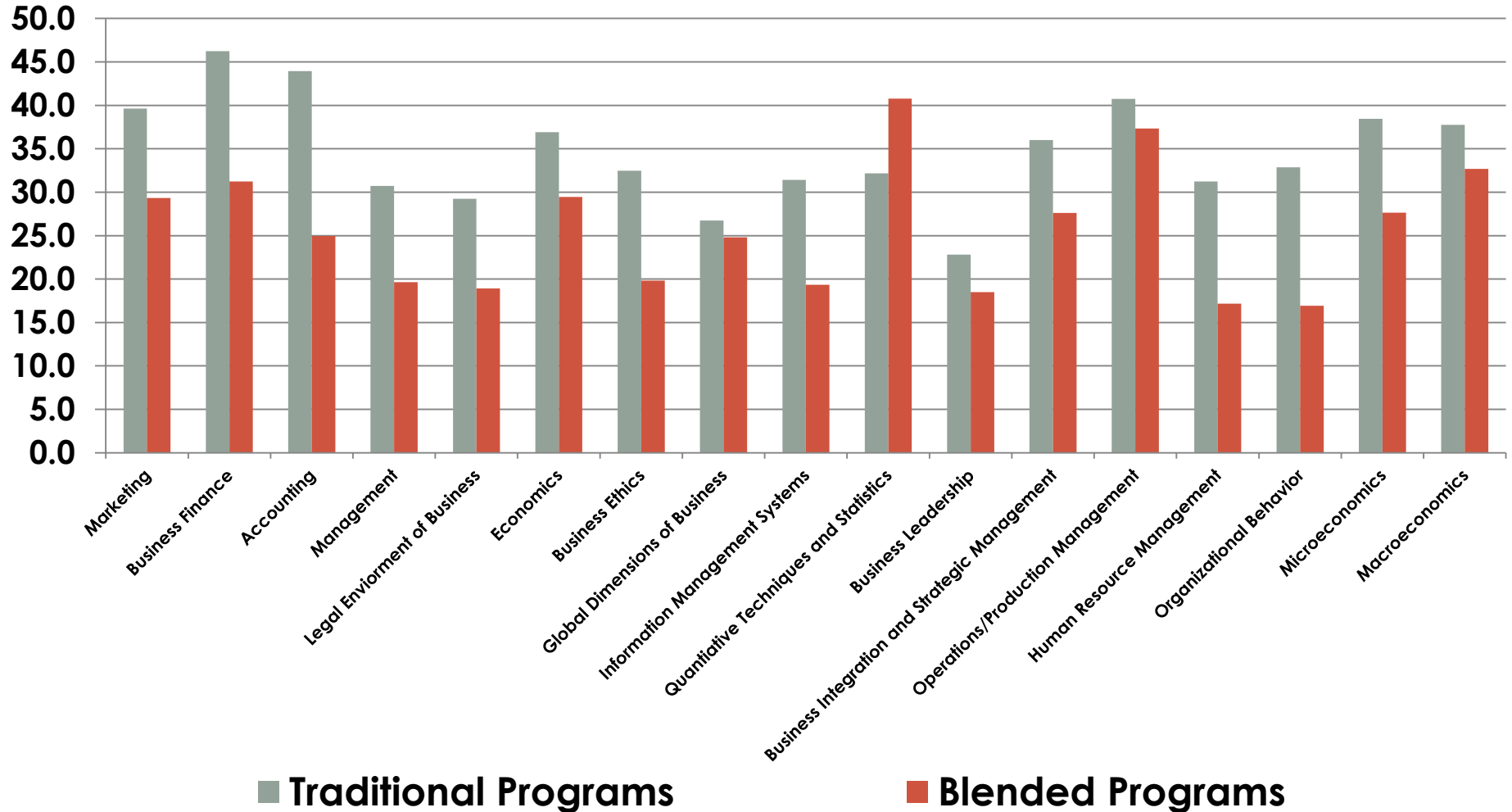
- For bachelors students, inbound scores indicate that traditional program students generally enter at a 3-10% lower level of knowledge based on exam scores compared to both blended and online program students. Blended and online program students enter at similar levels.
 - Traditional program students typically are younger with less experience compared to most blended and online program students.

- For masters students, inbound scores indicate the traditional program students generally enter at a 3-5% higher level of knowledge based on exam scores compared to both blended and online program students. Blended and online program students enter at similar levels.
 - Traditional schools often require a business undergraduate degree whereas most blended and online programs accept non-business undergraduate majors.

INBOUND/OUTBOUND (PERCENT CHANGE) EXAM RESULTS COMPARISONS

**A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY**

INBOUND/OUTBOUND (PERCENT CHANGE) TRADITIONAL PROGRAMS VS. BLENDED PROGRAMS BACHELORS LEVEL



INBOUND/OUTBOUND (PERCENT CHANGE)

TRADITIONAL VS. BLENDED PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Bachelors Student Results	T-test Value
Marketing		11.456
Business Finance		16.958
Accounting		20.568
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		15.407
Legal Environment of Business		13.822
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		9.146
Business Ethics		15.240
Global Dimensions of Business		2.303
Information Management Systems		15.318
Quantitative Techniques and Statistics		7.439
Business Leadership		5.915
Business Integration and Strategic Management		9.802
Operations/Production Management		2.271
Human Resource Management		14.135
Organizational Behavior		17.059
Microeconomics		11.512
Macroeconomics		4.981

TRADITIONAL VS. BLENDED

PERCENTAGE CHANGE: BACHELORS

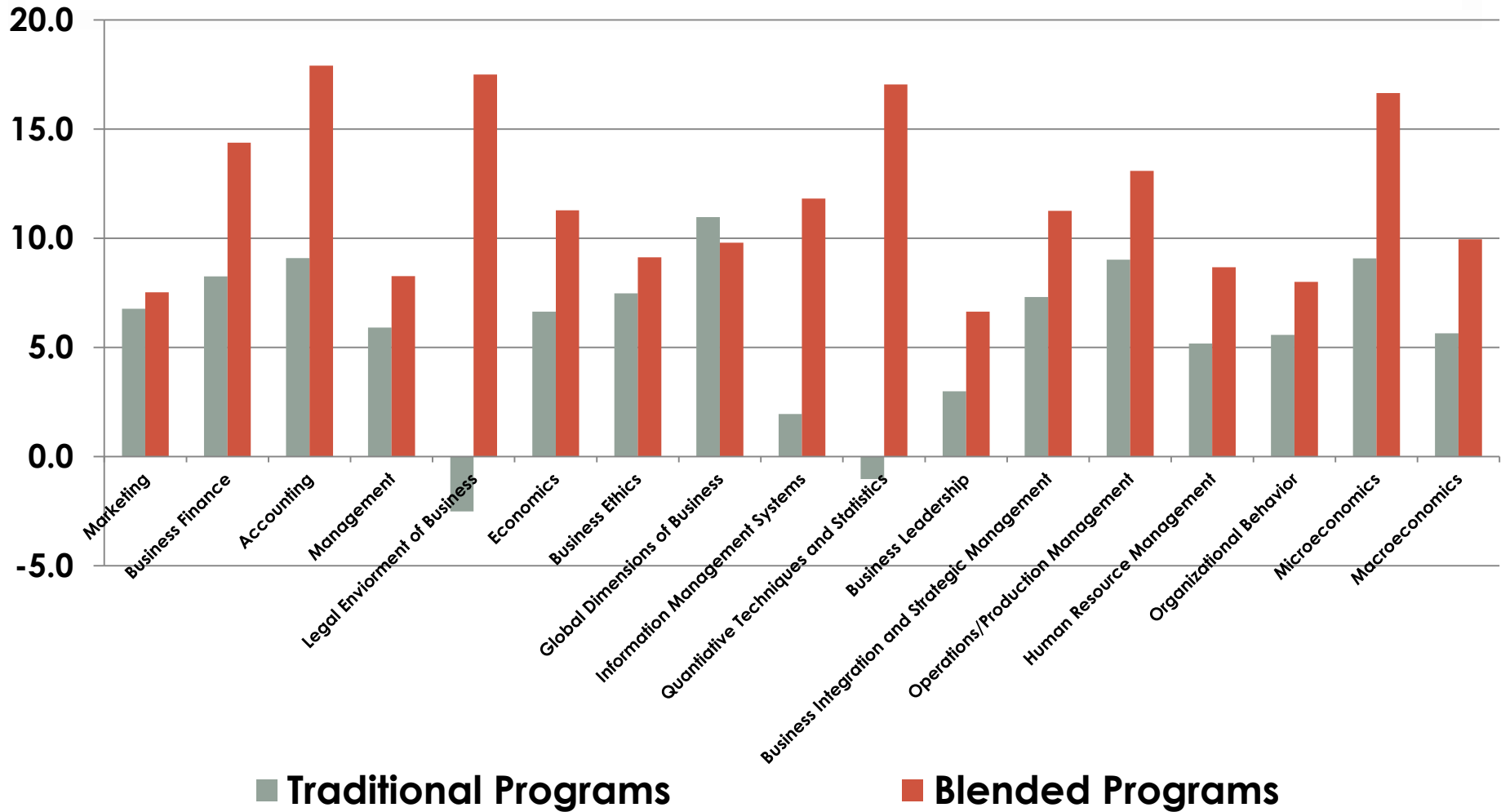
Mean percent changes between Inbound and Outbound Exams for 16/17 topics were significantly ($p < 0.10$) higher for traditional program students compared to blended program students.

One mean percent change score was significantly ($p < 0.10$) lower.

INBOUND/OUTBOUND (PERCENT CHANGE)

TRADITIONAL PROGRAMS VS. BLENDED PROGRAMS

MASTERS LEVEL



* Relatively small sample sizes for Inbound testing of Legal and Quant. for traditional programs.

**INBOUND/OUTBOUND (PERCENT CHANGE)
TRADITIONAL VS. BLENDED PROGRAMS
T-TEST VALUES (SUMMARIZED RESULTS)
SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED**

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Masters Student Results	T-test Value
Marketing		1.992
Business Finance		9.737
Accounting		11.501
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		4.929
Legal Environment of Business		23.502
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		7.730
Business Ethics		3.750
Global Dimensions of Business		1.581
Information Management Systems		14.954
Quantitative Techniques and Statistics		25.490
Business Leadership		9.761
Business Integration and Strategic Management		6.925
Operations/Production Management		5.065
Human Resource Management		4.942
Organizational Behavior		3.731
Microeconomics		10.161
Macroeconomics		5.860

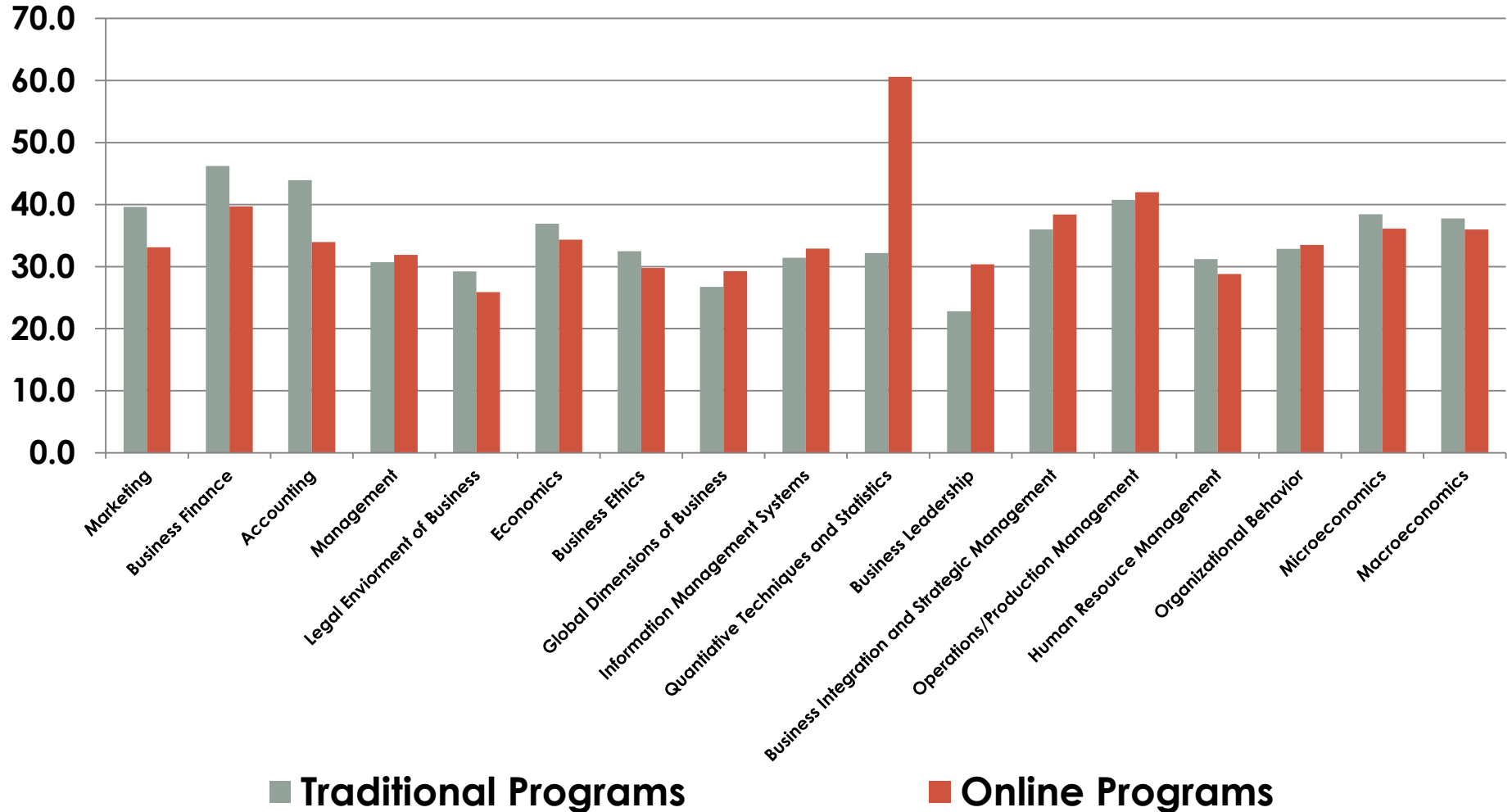
TRADITIONAL VS. BLENDED

PERCENTAGE CHANGE: MASTERS

Mean percent changes between Inbound and Outbound Exams for 16/17 topics were significantly ($p < 0.10$) lower for traditional program students compared to blended program students.

One mean percent change score was not significantly different.

INBOUND/OUTBOUND (PERCENT CHANGE) TRADITIONAL PROGRAMS VS. ONLINE PROGRAMS BACHELORS LEVEL



**INBOUND/OUTBOUND (PERCENT CHANGE)
TRADITIONAL VS. ONLINE PROGRAMS
T-TEST VALUES (SUMMARIZED RESULTS)
SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED**

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Bachelors Student Results	T-test Value
Marketing		9.310
Business Finance		9.427
Accounting		12.242
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		2.204
Legal Environment of Business		5.721
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		3.921
Business Ethics		4.025
Global Dimensions of Business		3.999
Information Management Systems		2.330
Quantitative Techniques and Statistics		36.017
Business Leadership		13.298
Business Integration and Strategic Management		3.451
Operations/Production Management		1.029
Human Resource Management		3.173
Organizational Behavior		0.887
Microeconomics		3.060
Macroeconomics		2.101

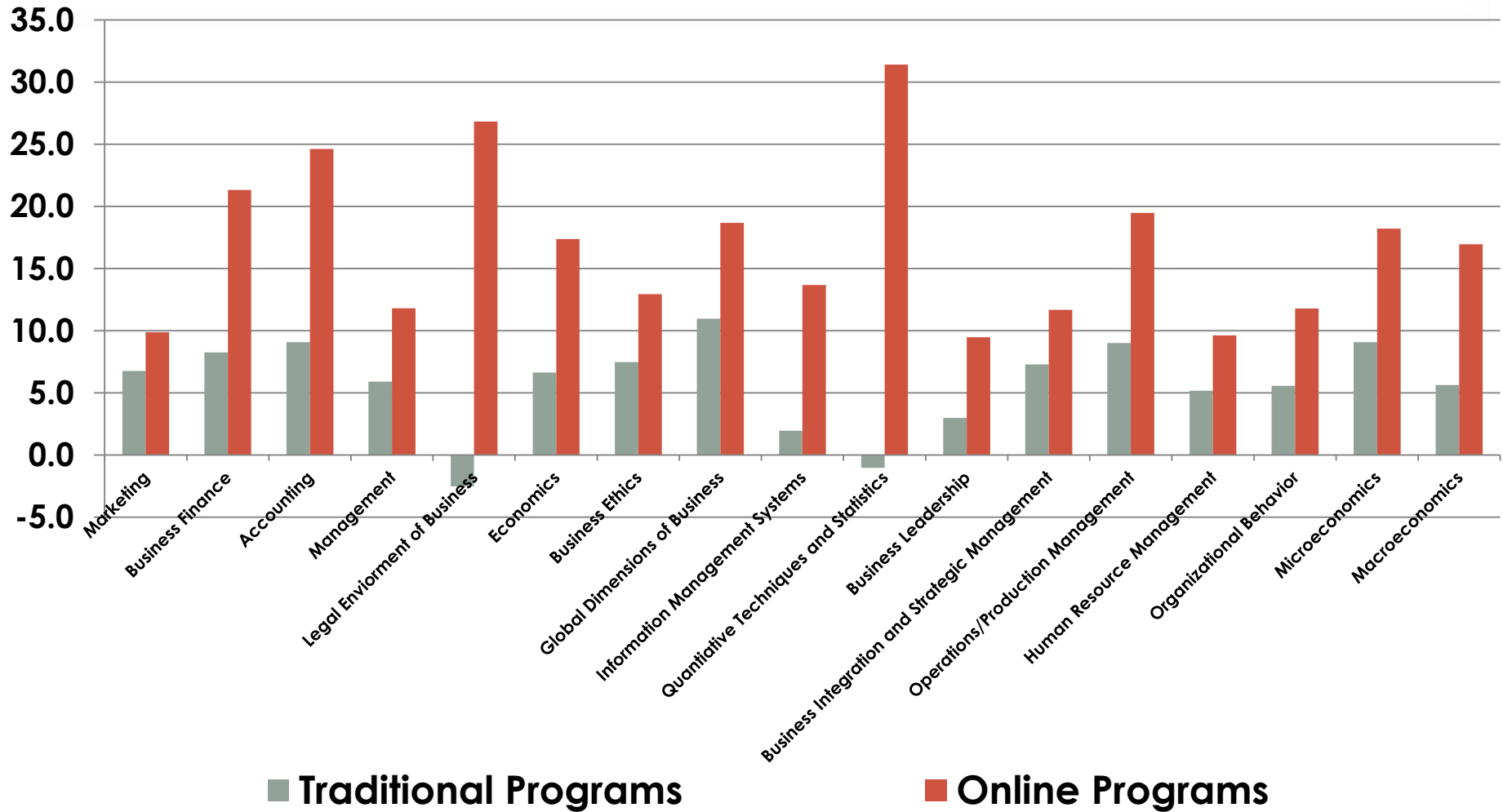
TRADITIONAL VS. ONLINE

PERCENTAGE CHANGE: BACHELORS

Mean percent changes between Inbound and Outbound Exams for 9/17 topics were significantly ($p < 0.10$) higher for traditional program students compared to online program students.

Six mean percent change scores were significantly ($p < 0.10$) lower and two mean percent change scores were not significantly different.

INBOUND/OUTBOUND (PERCENT CHANGE) TRADITIONAL PROGRAMS VS. ONLINE PROGRAMS MASTERS LEVEL



* Relatively small sample sizes for Inbound testing of Legal and Quant. for traditional programs.

**INBOUND/OUTBOUND (PERCENT CHANGE)
TRADITIONAL VS. ONLINE PROGRAMS
T-TEST VALUES (SUMMARIZED RESULTS)
SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED**

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

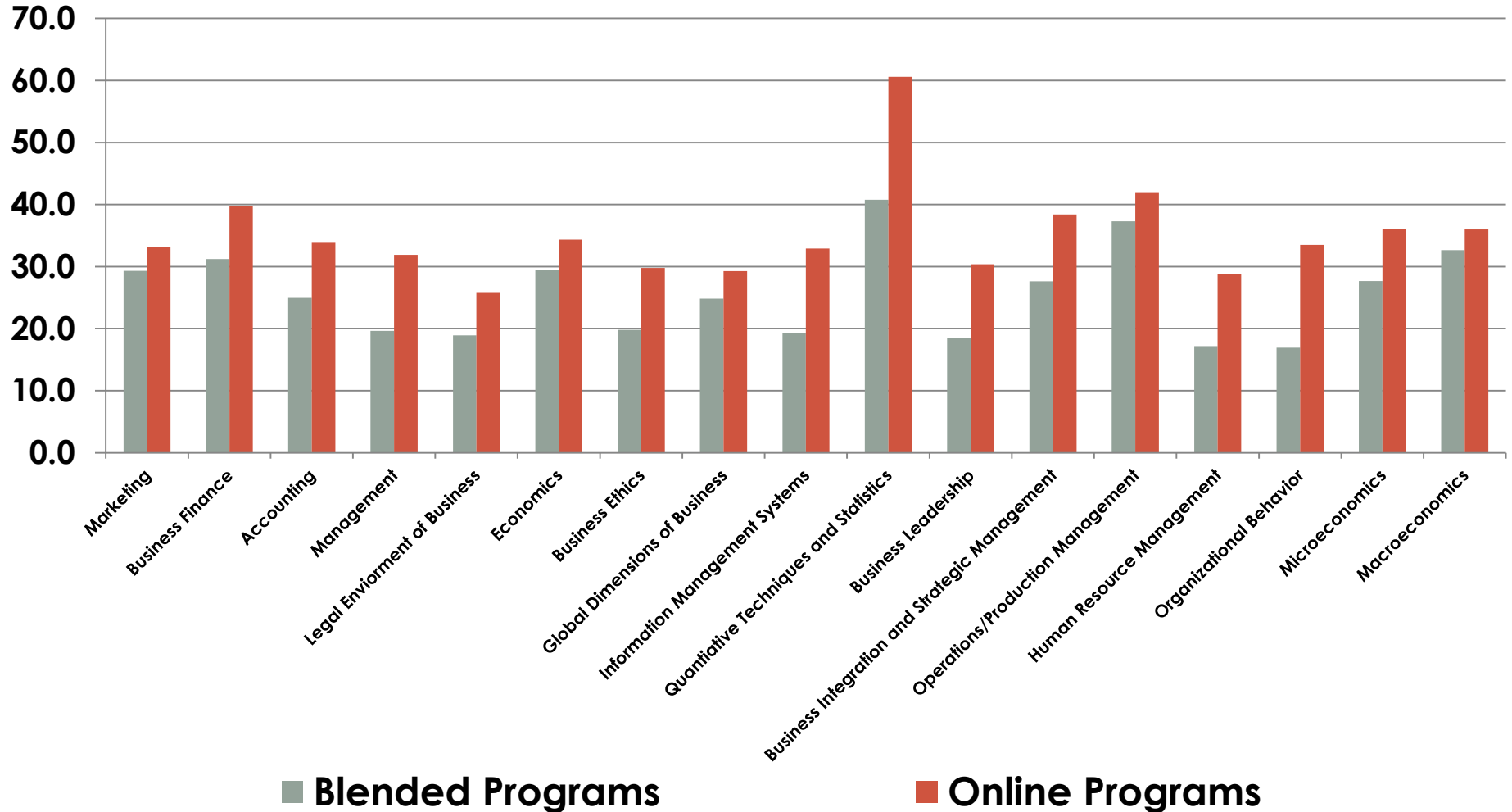
Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Masters Student Results	T-test Value
Marketing		8.991
Business Finance		22.479
Accounting		20.926
Management	(Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)	13.907
Legal Environment of Business		35.843
Economics	(Includes the Subtopics of Macroeconomics and Microeconomics)	18.955
Business Ethics		13.433
Global Dimensions of Business		11.074
Information Management Systems		18.661
Quantitative Techniques and Statistics		44.959
Business Leadership		18.798
Business Integration and Strategic Management		8.048
Operations/Production Management		14.142
Human Resource Management		7.352
Organizational Behavior		10.625
Microeconomics		14.091
Macroeconomics		16.984

TRADITIONAL VS. ONLINE PERCENTAGE CHANGE: **MASTERS**

Mean percent changes between Inbound and Outbound Exams for 17/17 topics were significantly ($p < 0.10$) lower for traditional program students compared to online program students.

INBOUND/OUTBOUND (PERCENT CHANGE) BLENDED PROGRAMS VS. ONLINE PROGRAMS BACHELORS LEVEL



INBOUND/OUTBOUND (PERCENT CHANGE)

BLENDED VS. ONLINE PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

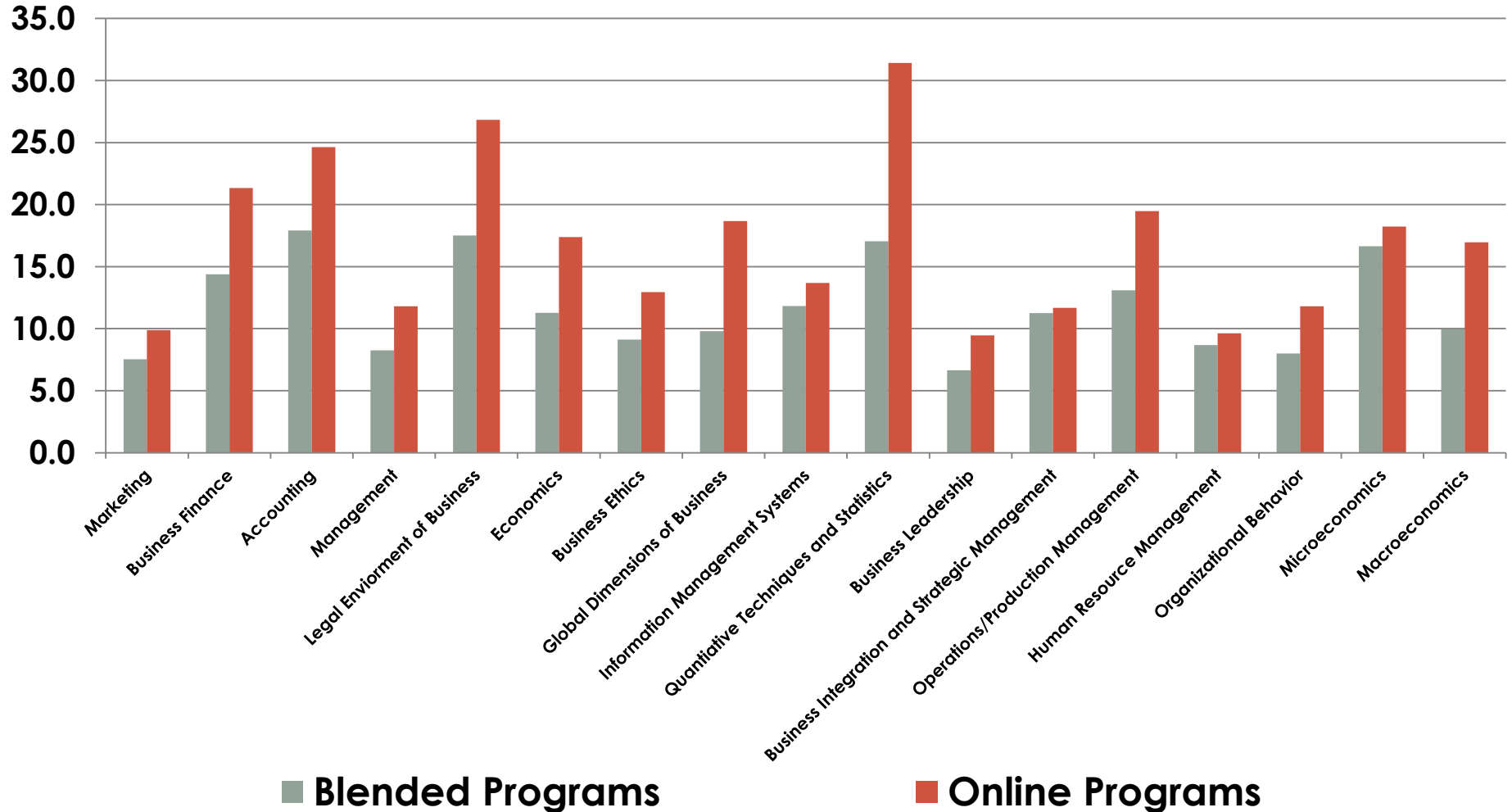
Exam Topic	Bachelors Student Results	T-test Value
Marketing		5.460
Business Finance		11.773
Accounting		14.515
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		20.092
Legal Environment of Business		11.894
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		7.811
Business Ethics		16.144
Global Dimensions of Business		6.865
Information Management Systems		22.475
Quantitative Techniques and Statistics		19.056
Business Leadership		20.230
Business Integration and Strategic Management		15.481
Operations/Production Management		3.891
Human Resource Management		14.621
Organizational Behavior		21.250
Microeconomics		11.116
Macroeconomics		4.248

BLENDED VS ONLINE

PERCENTAGE CHANGE: BACHELORS

Mean percent changes between Inbound and Outbound Exams for 17/17 topics were significantly ($p < 0.10$) lower for blended program students compared to online program students.

INBOUND/OUTBOUND (PERCENT CHANGE) BLENDED PROGRAMS VS. ONLINE PROGRAMS MASTERS LEVEL



INBOUND/OUTBOUND (PERCENT CHANGE)

BLENDED VS. ONLINE PROGRAMS

T-TEST VALUES (SUMMARIZED RESULTS)

SIGNIFICANT ($T_{.100}=1.645$) VALUES HIGHLIGHTED

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired t-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired t-test

Exam Topic	Masters Student Results	T-test Value
Marketing		9.751
Business Finance		17.028
Accounting		15.723
Management (Includes the Subtopics of Operations/Production Management, HR Management, and Organizational Behavior)		11.071
Legal Environment of Business		24.248
Economics (Includes the Subtopics of Macroeconomics and Microeconomics)		17.810
Business Ethics		16.809
Global Dimensions of Business		22.937
Information Management Systems		5.160
Quantitative Techniques and Statistics		26.876
Business Leadership		11.306
Business Integration and Strategic Management		1.444
Operations/Production Management		11.241
Human Resource Management		2.056
Organizational Behavior		8.637
Microeconomics		3.074
Macroeconomics		15.466

BLENDED VS ONLINE

PERCENTAGE CHANGE: MASTERS

Mean percent changes between Inbound and Outbound Exams for 16/17 topics were significantly ($p < 0.10$) lower for blended program students compared to online program students.

One mean percent change score was not significantly different.

**T-TEST ANALYSIS:
PERCENT CHANGE COMPARISONS BY TOPIC
AND SUBTOPIC**

**A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY**

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: MARKETING

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2513	1860	7320	1467	3605	8734
Mean	39.634	29.337	33.118	6.775	7.53	9.875
SD	32.061	27.236	24.314	12.253	12.202	12.016

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
11.456	9.310	5.460

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
1.992	9.737	9.751

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: BUSINESS FINANCE

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2550	1864	7620	1437	3635	8800
Mean	46.242	31.237	39.709	8.255	14.382	21.327
SD	30.828	27.653	28.635	20.198	20.184	21.854

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
16.958	9.427	11.773

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
9.737	22.479	17.028

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: ACCOUNTING

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2500	1843	7230	1376	3335	6130
Mean	43.948	24.97	33.948	9.087	17.907	24.631
SD	37.683	22.851	26.792	25.659	19.118	21.197

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
20.568	12.242	14.515

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
11.501	20.926	15.723

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2570	1864	7620	1467	3605	8772
Mean	30.717	19.655	31.876	5.907	8.261	11.804
SD	23.286	23.826	22.328	14.97	16.483	15.403

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
15.407	2.204	20.092

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.929	13.907	11.071

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: LEGAL ENVIRONMENT OF BUSINESS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2520	1832	7410	872	3358	8733
Mean	29.237	18.926	25.9	-2.519	17.506	26.829
SD	26.394	22.651	21.73	23.332	18.481	20.069

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
13.822	5.721	11.894

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
23.502	35.843	24.248

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: ECONOMICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2550	1864	7620	1407	3575	6189
Mean	36.914	29.446	34.367	6.643	11.278	17.377
SD	29.699	24.454	24.079	19.901	16.708	15.574

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
9.146	3.921	7.811

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
7.730	18.955	17.810

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: BUSINESS ETHICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2485	1843	7110	1437	3575	8794
Mean	32.483	19.827	29.769	7.481	9.125	12.937
SD	30.832	23.791	22.647	14.82	11.854	10.327

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
15.240	4.025	16.144

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
3.750	13.433	16.809

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: GLOBAL DIMENSIONS OF BUSINESS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2466	1873	7080	1317	3579	8703
Mean	26.747	24.82	29.294	10.977	9.797	18.678
SD	28.984	25.958	21.44	24.22	19.995	18.236

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
2.303	3.999	6.865

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
1.581	11.074	22.937

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: INFORMATION MANAGEMENT SYSTEMS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2281	1783	6150	842	3215	4330
Mean	31.411	19.34	32.923	1.95	11.823	13.691
SD	27.781	22.448	22.545	17.175	16.583	14.038

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
15.318	2.330	22.475

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
14.954	18.661	5.160

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: QUANTITATIVE TECHNIQUES AND STATISTICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2300	1804	5850	1382	3504	3549
Mean	32.177	40.776	60.605	-1.03	17.05	31.408
SD	31.745	40.249	32.883	22.586	21.666	23.183

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
7.439	36.017	19.056

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
25.490	44.959	26.876

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: BUSINESS LEADERSHIP

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2155	1783	5790	1347	3215	6971
Mean	22.804	18.505	30.393	2.994	6.643	9.47
SD	23.411	22.102	20.324	11.487	11.592	12.019

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
5.915	13.298	20.230

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
9.761	18.798	11.306

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: BUSINESS INTEGRATION AND STRATEGIC MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2275	1864	6090	1407	3635	8778
Mean	35.994	27.616	38.387	7.304	11.259	11.676
SD	28.763	26.151	26.712	19.453	14.428	15.157

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
9.802	3.451	15.481

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
6.925	8.048	1.444

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: OPERATIONS/PRODUCTION MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2137	1501	6210	1313	2998	7631
Mean	40.758	37.326	42.017	9.015	13.088	19.483
SD	49.86	41.02	45.456	23.91	25.161	29.301

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
2.271	1.029	3.891

Significantly Higher Mean of the First Item
Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item
Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
5.065	14.142	11.241

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: HUMAN RESOURCE MANAGEMENT

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2199	1532	6420	1436	3212	8110
Mean	31.226	17.173	28.816	5.18	8.671	9.623
SD	31.998	28.303	26.72	21.598	23.645	18.087

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
14.135	3.173	14.621

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.942	7.352	2.056

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: ORGANIZATIONAL BEHAVIOR

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2448	1802	7200	1285	3030	7301
Mean	32.869	16.93	33.5	5.575	8.003	11.797
SD	30.71	29.646	29.428	19.195	20.356	20.26

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
17.059	0.887	21.250

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
3.731	10.625	8.637

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: MICROECONOMICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2429	1774	7320	1373	3392	5947
Mean	38.461	27.652	36.11	9.084	16.654	18.224
SD	32.935	27.78	32.455	22.154	25.888	19.4

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
11.512	3.060	11.116

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
10.161	14.091	3.074

INBOUND/OUTBOUND EXAM SCORE COMPARISONS (PERCENT CHANGE)

TOPIC: MACROECONOMICS

<u>Statistic</u>	Bachelors			Masters		
	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>	<u>Traditional</u>	<u>Blended</u>	<u>Online</u>
N	2488	1833	7440	1407	3545	6159
Mean	37.769	32.678	35.989	5.642	9.956	16.969
SD	37.905	29.263	32.296	23.441	23.165	18.279

Paired *t*-Test Values: Bachelors Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
4.981	2.101	4.248

Significantly Higher Mean of the First Item Compared to the Second Item of the Paired *t*-test

Significantly Lower Mean of the First Item Compared to the Second Item of the Paired *t*-test

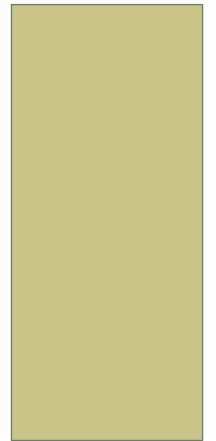
$$t_{.100} = 1.645$$

Paired *t*-Test Values: Masters Percent Change

<u>Traditional vs. Blended</u>	<u>Traditional vs. Online</u>	<u>Blended vs. Online</u>
5.860	16.984	15.466

SUMMARY & CONCLUSIONS

A STATISTICAL COMPARISON OF EXAM RESULTS FROM US
SCHOOLS BASED ON PROGRAM DELIVERY MODALITY



RESEARCH QUESTION AND HYPOTHESES

What, if any, differences exist with student exam results using a normed business program assessment instrument based upon the delivery modality (traditional, blended/hybrid, and online) of the academic program?

~~H₀₋₁: There is no significant difference of student program assessment exam scores between traditional and blended academic programs.~~

H_{A-1}: There are significant differences of student program assessment exam scores between traditional and blended academic programs.

~~H₀₋₂: There is no significant difference of student program assessment exam scores between traditional and online academic programs.~~

H_{A-2}: There are significant differences of student program assessment exam scores between traditional and online academic programs.

~~H₀₋₃: There is no significant difference of student program assessment exam scores between blended and online academic programs.~~

H_{A-3}: There are significant differences of student program assessment exam scores between blended and online academic programs.

THE MORAL OF THE STORY?

We do not mean to suggest that we do away with traditional campus-based programs.

Rather, we recognize that such programs are invaluable for the social, personal, and professional development of young adults and that the quality of the education experience at a traditional campus certainly exists.

THE MORAL OF THE STORY?

A one-size-fits-all solution is not appropriate.

It takes a diversity of delivery modalities to reach the broadest possible customer needs.

It is not feasible due to a variety of economic, political, and geographic factors to suggest that all students must attend a traditional campus-based program in order to succeed in higher education.

THE MORAL OF THE STORY?

All delivery modalities (the academic degree programs) can be and should be improved.

After all, it is about continuous improvement and quality assurance, particularly in these times of tight finances for higher education (personal, corporate, and governmental).

THE MORAL OF THE STORY?

Perhaps most importantly, the findings of this analysis clearly indicate that the quality of online and blended programs is on par with traditional campus-based programs.

Although paired t-tests showed many significant differences, a 2x17 Chi Square analysis of each modality pairs did not find and significant differences in the array of exam scores on outbound exams.

No longer should we consider someone's online degree as inferior or otherwise of less value/sub-standard than someone else's traditionally obtained degree.

CONSIDERATIONS FOR ADDING AN ONLINE OR BLENDED PROGRAM TO THE CAMPUS' TRADITIONAL PROGRAM OFFERINGS

- **Cannot simply “copy/paste” a traditional course syllabus into an online or blended course syllabus. The delivery of content and the knowledge transfer mechanisms are very different.**
- **Not all traditional course professors make good online/blended course professors and vice versa. Teaching online and blended students requires a different skill-set.**
- **Online instruction is time-intensive for course professors because of the personal interactions, grading requirements, and discussion boards. It may not be reasonable to expect a traditional course professor to simply “pick up” the same course online if the expectation is to do both at the same time.**

CONCLUDING THOUGHTS

- **Online education, when properly administered, is clearly an academically appropriate delivery modality for most students.**
 - **Students are showing both a higher knowledge level and higher percent gain in knowledge from online business education programs compared to both their traditional and blended program counterparts.**
- **Traditional program administrators may want to consider instructional/educational techniques used by online programs to facilitate learning in order to achieve higher gains and higher knowledge levels (e. g. flipped classroom approaches, individual mentoring, etc.).**

OLIN O. OEDEKOVEN, PH.D. - PRESIDENT & CEO



Dr. Olin O. Oedekoven has over 35 years of leadership experience at all organizational levels from first-line leader through strategic leadership. Olin has extensive work experience in both the public and private sectors with a comprehensive background in management, business administration, and organizational leadership.

Olin graduated from South Dakota State University with a B.S. in Wildlife and Fisheries Sciences. He then attended the University of Wyoming where he received a Master's degree in Wildlife Management. Olin continued his formal education with Northcentral University where he received both an MBA and his Doctorate in Business Administration with specializations in Management and Public Administration. Olin completed a post-doctoral program in human resource management.

Olin is a graduate of the Army Command and General Staff College and the U.S. Army War College where he received a Master's Degree in Strategic Studies. His military experience includes senior staff, battalion command, and brigade command assignments. Olin retired from the National Guard in 2011 as a Brigadier General after nearly 33 years of military service. In his last assignment, he was the Deputy Adjutant General for the Wyoming National Guard, an organization with nearly 3,500 members.

Currently, Olin is President & CEO of Peregrine Academic Services and Peregrine Leadership Institute.

*JUST HOW GOOD IS THAT ONLINE OR
BLENDED BUSINESS PROGRAM
COMPARED TO A TRADITIONAL CAMPUS-
BASED PROGRAM?*



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OLIN O. OEDEKOVEN, PH.D.

**A STATISTICAL COMPARISON OF EXAM RESULTS FROM
US SCHOOLS BASED ON PROGRAM DELIVERY
MODALITY**