

From Business Modeling to Business Management: An Exploratory Study of the Optimal Decision Making on the Modern University Level

Ruizan Mekvabidze

Gori State Teaching University, 53 Chavchavadze ave., Georgia

gsu@grt.ge

Abstract. It is a fact that "The Fourth Industrial Revolution" is one of the main aspects of higher educational reforms, curricula changes, and knowledge formation. For graduates' it must be directed for the evolution of knowledge creation according to the competitive job market requirements. The Modern Digital Industrial Age and its impact on the orientation of education tend to reach substantial improvement of new generation learners and offer opportunities for the idea development for transforming research curricula with the main aspect: to develop good progression of integration knowledge and competencies of research for practice. Higher Education is a social investment and includes benefits from research and technological innovation with employed research methods to examine the expected professional level of university graduates. The scientific paper considers knowledge formation possibilities of graduates of Master of Business Administration and Management with specialization of management for the competitive job market and: classifies the main approaches for exploration of business modeling studying on the modern university-level concerning forming successful specialists, and to respond to the requirements of the modern competitive world, accordingly; analyzes the problems and issues of higher education with system dynamics of educational reforms institutional diversity, some directions are identified for knowledge creation (a program of research methods, students' motivation); assesses the impact on business and economics graduates' knowledge creation and its use in practice by them. Information for processing has been gained accordingly by the questionnaires of four categories with various indicators. There analyzed the data processing results and given conclusion and recommendation to improve the research program for MBA students with "model building" and optimization methods.

Keywords: exploratory study, optimal decision making, progression of integration knowledge, formation specialists, job market.

1. Introduction

Information and more unified information space is a basis for the decision-making process and a crucial factor in the research process studying and can be used for the integration of knowledge of optimal decision-making in practice. As industrial age has taken place in recent years and analysis methods optimal managerial decisions are necessary for managers, they must learn to analyze and understand data concerning relevant variables and relationships and to make inferences and predictions based on such data (Mekvabidze, 2013).

The possibility to use data to drive decisions for modern management effectively includes using data for decision making with a discussion of different frameworks to support optimal decision-making, and questions (Mekvabidze,2016): What is the role of data in the research process for optimal decision making? What is the role research design for thinking for optimal decision making?

The new technology that rapidly occurring globally has a positive impact on graduates because of the arrival of new possibilities a creation and using of the unified information space (UIS) that and can be used as a tool for establishing meaningful projects to engage graduate students and educators in critical thinking and problem-solving. "In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before" (Mekvabidze, 2015).

Today, we need to know that the new industrial age presents a modern set of challenges and address to improve higher education management. We cannot draw a picture, and we cannot research the problems without education development as education means growing of knowledge (Bakradze, 2013) after that, a country is ready to develop economics, business, healthcare, and so on. Education facilitates the acquisition of new skills and knowledge that increase productivity, which creates a new direction of country economic development in various ways.

2. Literature Review

Business involves different academic disciplines, such as mathematics, economics, sociology, psychology, etc., and when we decide to research business, we have to draw business research as a multi-disciplinary object. Business research is conducted with a purpose to understand: What do business want to find out? What are the arguments that need to be built about a concept?

In the Industry 4.0, it is possible to combine different business models with customer access flexibly (e.g., production on demand; production on-site and consumer engineering) and thereby creating new kinds of production methods. Disruptive digital business models will focus on generating extra digital revenues and optimizing customer experience in terms of interaction and access (Didier Blanchet, Pauline Givord,2017). Big Data is today's technology hot topic. The term "Big Data" entered the mainstream vocabulary around 2010 when people became

aware of the exponential rate at which data were being generated, primarily through the use of social media. Engineers and computer scientists quickly realized that Big Data could not be defined purely in terms of size. While it is undoubtedly true that the volume of data has increased by orders of magnitude over the past decade, other factors have changed the informational landscape as well. Big Data allows for better prediction of economic phenomena and improves causal inference (Jinjing Li *et al.*, 2017).

Recently, industrial Big Data analytics has attracted extensive research interests from both Academia and Industry. Effective use of industrial Big Data analytics became a basic competition for today's business. The interest in The Fourth Industrial Age, which concerned with Big Data, considers many questions on combining, analyzing, and using them for any problem-solving. Such considerations and debates are documented (World Economic Forum, 2016), and among these questions, the question of how the data are used often debated in the educational area, also. Higher Education in the fourth industrial age potentially transformed not only society. It concerns higher education with its main characteristics teaching, Learning, research, and in this case, Big Data helped to develop Learning Analytics. It affects business, and Big Data helped to develop Business Analytics with statistical analysis, predictive modeling, optimization, and simulation. And more, the advent of Big Data is associated with the active development of new platforms and the improvement of the software. In result, Big Data helps us to understand better a range of issues of business decision problem research "...sets offer a higher form of intelligence and knowledge that can generate insights that were previously impossible, with the aura of truth, objectivity, and accuracy." (Acquisti, Gross2009).

Besides its, the decision-making support models are an excellent tool in situations involving technological changes and new, intelligent field of technology for process management is continuously being developed in the industry. The leading idea is to understand and assess the relationship between decision making art and technology development for successful realization management of business and economics through business research studying and new technology (Mekvabidze, 2016).

Decision analysis functions at four different levels as a philosophy, as a decision framework, as a decision-making process, and as a decision-making methodology—and each level focuses on various aspects of the problem of making decisions (Mcname, Celona, 2008). This approach is a useful and powerful management tool for economists and business makers. However, it is a central task of managerial economics that considers business makers' problems through using systems analysis and operations research. This is a reason that nowadays, the focus is on very complex and integrated decision-making systems.

In the era of the new industry of technology will play a more significant part in optimizing solutions. Making the right decision is only validated by the results. But

in the new technology age, decision making and its optimization have become more challenging due to the exponential growth and access to information. Optimization of decision making is an essential skill required for any manager as a competent decision-maker is a talent that can be gained through years of practice. A leader can make any decision, but what matters more is effective decision-making that provides for a positive outcome. A Harvard study came up with a list of characteristics that are correlated with ethical decision making (positive outcomes), as technology becomes an essential factor in decision making. As a result, decision-makers should consider bringing in outside expertise if there is no in-house expertise to help clarify the technology in context with the problem (Davenport, Patil 2012).

Today, optimal decision-making has to be included in the research studying process where the role of technology in optimal decision making comprises. As a result, using of new technology should be as a key to enriching the business research program, which will be directed to gain the competitive skills and knowledge for the labor market requirements (Provost, Fawcett, 2013).

A graduate, as the decision-maker in the future, if he wants to achieve optimum results in decision-making and operations, by accomplishing set tasks, must take into account the use of new, modern market trends of progress and development new approaches and upgrade them in everyday business processes. The role of information systems in decision making is organized to support the data processing, office automation, management, decision-making and reporting as the new technologies primarily affect the development and emergence of new tools, models, methods, techniques and systems that are tailored to customer requirements, and decision-makers (Elgend, 2016).

Based on the OECD report, we can discuss the skills required for success by using the Industry 4.0 environment and predict the higher universities' development in the future where we have to considered collaboration between universities, industry, and public bodies. Besides, life requires working and communicating with people from different backgrounds and understanding the possibility to learn and find new solutions to increasingly complex challenges. The competencies related to management, in this case, are technology awareness, change management, and using forecasting data and planning metrics for strategy development (David, 2016). As the world becomes more connected and dependent on natural and intellectual resources and educational university requirements across the globe have increased, we explore closely linked questions to the international and global level research and understanding for sustainability challenges faced by global socio-scientific issues and the globalization of education. Obviously, "it becomes impossible to consider contemporary education in isolation from globalization as the dominant logic and rethinking social and cultural life in which it is located" (Mekvabidze R., Mekvabidze P., 2009).

One crucial question to be investigated is the quality program of research studying. Developing globalization helps to formulate new questions and methods to examine these questions with opportunities to expand the conceptual and analytical sides. The main direction has to engage graduates in the study program considering student's employment problems but the matters are arising: Is the graduate student ready for this process? Could the students handle modern complex systems? What is the relationship between the indicators of research studying and practice? (Mekvabidze, 2015).

In a rapidly changing world, rethinking the issues of HE universities is addressed to the problems of severe political conflict and potential social disruption. Quality educational programs play a crucial role in the development of the workforce for the competitive job market and preparing students for life. The main essential issues are providing quality business research programs responses to global economic restructuring, and specialization and integration of research and practice with gain the job experience (Mekvabidze, 2015).

The analysis focuses on areas of acute crisis within the EU universities, too: issues over the curricula, concerns over the academic freedom, issues over the regulation of the research methods studying, and issues over the integration of the research studying with practice by the requirements of the job markets. Such problems are considered in Baker and Lenhardt research (Baker, Lenhardt, 2008): "The ongoing crisis of the German university illustrates the potential difficulties with implementing the emerging global model (EGM) of the new research university in a nation where there is a long tradition of higher education". Also, these problems take place if we consider this problem in a broad sense, as Shapiro states in his research too (Shapiro, 2009). In the New Industrial Revolution Era education faces many critical issues in the frame of the current educational reforms and the more significant questions should be formulated as are: How and when we can solve them? What should we do for it? The different opportunities and challenges for Higher Education systems require specific skills for 2020 vs. 2015. In 2020, the first place takes "Complex approaches and problem-solving" again, and this result indicates that higher education far from the implementation of new industrial technology. One of the versions to improve this situation to transform research studying at the MBA level (World Economic Forum, 2016).

3. Research Methodology

By the review, the content of the syllabuses of the discipline "Business research methods and models" syllabuses most of the European universities and books on this theme include business statistics material that can be considered as the prerequisite material mostly for this discipline. In this case, it is interesting to find two main questions: what types of analysis can be conducted and what kinds of analysis can be used for improving the studying on the need level (Snyder, 2019).

Business research methods teaching process include business statistics material and for its teaching is spending 2/3 all of the teaching hours or more by the EU universities. MA students do not reach the need basis for knowledge capacity, and as a result, they are less competitive for the job market. This is why changes and improvement research program or introduction new disciplines or enrich research material is necessary.

Businesses have moved from individual business functions towards optimizing the entire business process, as called business process reengineering. It has arisen under information technology and the trend towards globalization. Hence, business process performance is one of the sources of competitive advantage nowadays. It means that it has to be changed business research studying procedure as research is a basis of business modeling, business management, and operation management. Graduate's knowledge and practical skills must be concerning business functions toward its optimization with the management decision-making process, operations research, and powerful technique in practice today. To improve business decisions by optimization methods, it means: data integration and analytics, how to formulate and solve complex optimization models, and to incorporate risk management concerns.

Master of Business Administration and Management (MBAM) students' as the participants in the learning process, can manage their own Learning and are able to appropriate learning goals to use their existing knowledge skills and strategies to direct job market requirements. Therefore, students have to understand and develop strategies that will best enhance knowledge that can be structured as a model – these modelers close to the process and modern technologies. The programs for formation specialists for business have to include studying material on models' building for decision making, business process optimization, and business process management as employers look for such specialists.

Today, it is necessary to examine various approaches that promote students' knowledge improvement to respond to job markets in the future. In the frame of the modern educational reforms have to be realized student's active engagement in Learning that provides them with the need skills and prepares them to meet the challenges and changes occurring in the workplace competently. The objectives of the research framework are: to draw the student's objective for knowledge creation to business analytics, business model building with optimal decision making for the competitive job market; to bring the approaches of academics and teachers of the need to transform the program of training in business research, taking into account new technologies and the competitive job markets.

The research framework, based on the practical approaches to the competitive job market and curricula of MBAM on a higher university level, five variables were considered as dependent variables on various factors: business research methods and models' teaching with the 6 indicators; business research methods' and models'

Learning with 8 indicators; knowledge creation through research approaches with the 12 indicators; knowledge creation through research with practice with 8 indicators; and knowledge creation for business research studying according to the job market, 21 indicators.

This study will be examined the effect of these variables on the dependent variable, which is knowledge creation with capacity for the job market. The study seeks the behavior of faculties and students by their answers accordingly. In the frame of the research was conducted: preparing two questionnaires for the academics and students separately; research design; research instrumentation; data collection by questionnaires according to the sample size; data processing using STATA; analysis; discussion; conclusion.

Three criteria usually will need to the specified to determine the appropriate sample size: the level of precision, the level of confidence, the degree of variability. The sample size was calculated by using the Taro Yamane formula (A case of the finite population). $n = N / [1 + N(e)^2]$ where: n - sample size; N - population size (the universe); e - the acceptable sampling error.

The study developed two types of surveys design for academics and students. The samples are formed from the various categories and were considered: three groups of faculty members (Professors, Ass. Professors, Invited teachers). Developing questionnaires as the data-gathering tool (108 copies) was collected. All copies were not returned, giving a response 83%. MBA students from Economics, business administration, and management were selected. Developing questionnaires as the data-gathering tool (130 copies) was spread. All copies were returned, giving a response of 100%. Developing questionnaires used as a survey tool for this study was made with the various number of items into different sections. But they are identically for the students and the academics. The response options are: Strongly agree (SA), Agree (A), Neutral (N), Disagree (DA), Strongly Disagree (SD). The tests were carried out at the 0.05 level of significance.

4. Discussion of Findings

The Response of academics and students according to the research indicators. Regarding research results, the respondents were: the academics (108 persons) and the students (130 persons). Both were answered on the same research indicators. Demographic information about respondents is given in Table 1.

The responses of academics and teachers (108 respondents) are given in Tables 2-5 according to the indicators with 6,8,12, 8, accordingly, with various answers: strongly agree (SA), agree (A), neutral (N), disagree (DA), and strongly disagree (SDA). In Table 6 with 21 indicators are placed the sum of positive answers: strongly agree (SA), agree (A) and we call it "Yes" and the sum of negative answers: disagree (DA) and strongly disagree (SDA) and we call it "No". The results are placed in Table 6. The answers "neutral (N)" on the indicators are ignored.

Table 1: Demographic information

Demographic categories	Classification	Frequency	%
Gender	F (teacher)	62	57.4
	M(teacher)	46	42.6
	F(student)	73	56.2
	M(student)	57	43.8
Status	Invited teacher	28	25.9
	Ass. Professor	51	47.2
	Professor	29	26.9
	The 1st year MBAM student	72	55.4
	2nd-year MBAM student	58	44.6
Teaching experience	Above 20	10	9.3
	Years: 15-20	22	20.4
	Years: 11-15	26	24.1
	Years: 5-10	20	18.5
	Under 5 years	30	27.7

Identically, the responses of MBAM students' (130 respondents) are given in Tables 6-10 according to the indicators with 8,12, 8, 6 accordingly, with various answers: strongly agree (SA), agree (A), neutral (N), disagree (DA), and strongly disagree (SDA). In Table 11 with 21 indicators are placed the sum of positive answers: strongly agree (SA), agree (A) and we call it "Yes" and the sum of negative answers: disagree (DA) and strongly disagree (SDA) and we call it "No". results are placed in Table 11. The answers "neutral (N)" on the indicators are ignored.

STATA provides data processing of the results of Table 6 and Table 11. The results are presented in Figure 1. Such designations were identified:

- Yes_Academics – positive answers of the academics on the indicators (Table 6);
- Yes_Students – positive answers of the Students on the indicators (Table 11);
- NO_Academics – negative answers of the academics on the indicators (Table 6);
- NO_Students – negative answers of the students on the indicators (Table 11).

Mean estimation		Number of obs = 21		
	Mean	Std. Err.	[95% Conf. Interval]	
Yes_Academ~s	75.95238	2.252487	71.25378	80.65099

. mean Yes_Students

Mean estimation		Number of obs = 21		
	Mean	Std. Err.	[95% Conf. Interval]	
Yes_Students	71.21095	2.217637	66.58504	75.83686

. mean NO_Academics

Mean estimation		Number of obs = 21		
	Mean	Std. Err.	[95% Conf. Interval]	
NO_Academics	24.04762	2.252487	19.34901	28.74622

. mean NO_Students

Mean estimation		Number of obs = 21		
	Mean	Std. Err.	[95% Conf. Interval]	
NO_Students	10.84	1.728637	7.234125	14.44587

Fig. 1: Results of analysis (integration of Table 6 and Table 11)

As we see, both the academics and students agree on transforming the MBAM business research studying program with business process modeling aspects that take a central place to the business process solving with operations research and management science with 0.05 significance level. From the student's perspective, a mean of the positive answers is 71.21095, Std. error – 2.217637. From the academics' perspective, a mean of the positive answers is 75.95238, Std. error – 2.252487.

5. Conclusion

In The general idea of the work was to show a vision of the academics and MBAM students on the possibilities for transformation of the business research studying program with using the technique of new industrial age for business research knowledge creation according to the competitive job market and the requirements of employers which look for the need specialists with experience and ability in they recruit.

In the research were involved academics (108 respondents) and MBAM students (130 respondents), which responded to the questions of the various categories. The study was based on the practical approaches to the competitive job

market and curricula of MBAM on a higher university level. Five variables were considered as dependent variables on various factors: business research methods and models' teaching with the 6 indicators; business research methods' and models" Learning with 8 indicators; knowledge creation through research approaches with the 12 indicators; knowledge creation through research with practice with 8 indicators; and knowledge creation for business research studying according to the job market, 21 indicators.

Based on the research results, both the academics and students agree on transforming the MBAM business research studying program for knowledge creation according to the job market with 0.05 significance level with business process modeling aspects that take a central place to the business process solving with operations research and management science.

6. References

Acquisti, A. and Gross, R. (2009). Proceedings of the National Academy of Sciences of the United States of America, 06. <https://doi.org/10.1073/pnas.0904891106>

Baker D., Gero Lenhardt. (2008). Institutional Crisis of the German University. *Higher Education Policy*, 21, 49-64.

Bakradze L. (2013). Strategic Development of Higher Education and a Science – Integration of Teaching and Research. *Tbilisi: The International Institute of Education Policy, Planning and Management (EPPM)*. <https://eppm.org.ge/en/>

Didier Blanchet, Pauline Givord. (2017). Big Data, official statistics and measuring the economy. *L'economie Francaise*, 59-76.

Fred R. David, (2016). Strategic Management: A competitive Advantage, Approaches, Concepts and cases. *16th edition, Pearson*.

Harold T. Shapiro. (2009). Higher Education and Society. *UNESCO 2009 World Conference on Higher Education. Pub. SIDA/SAREC*.

Hannah Snyder. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104: 333-339.

Jinjing Li *et al.* (2018). Big Data in Tourism Research: A Literature review. *Journal TOURMAN*. <https://doi.org/10.1016>.

Mekvabidze R. (2013). Responding tomorrows world – following educational reforms in Georgia: Studying trends of transformation of economic education. *5th International conference on education and new learning technologies Barce technologies. Barcelona*,1-3.

Mekvabidze R. (2016). The knowledge triangle as a main educational aspect of learning outcome. *Scientific Papers of Berdyansk State Pedagogical University. Series: Pedagogical sciences, Issue 2. Berdyansk*, 126-132.

Mekvabidze R. (2015). Approaches to the Modern University: Student Engagement in Learning Outcome for Knowledge Creation According to the Competitive Market Requirements. *Journal of System and Management Science*, (5:4), 1-30.

Mekvabidze R. (2016). Decision Making Technology in Practic.1st edition. *Publisher: Universal, Tbilisi*.

Mekvabidze R., Mekvabidze P. (2009). The Aspects of Globalization Economic Process. *International-Scientific Conference: Globalization, World Crisis and South Caucasus*, 16-17 May, Pub. Innovation, 82-87.

Mekvabidze R. (2015). Study Module: Business process Modeling. *The 1st edition, Universal, Tbilisi*.

Peter Mcname, and John Celona. (2008). Decision analyses for the professionals. *SmartOrg*, ISBN 0-9710569-0-0.

Provost, F., and Fawcett Tom. (2013). Data Science and Its Relationship to Big Data and Data-Driven Decision Making. DOI: 10.1089/big.2013.1508.

Thomas H. Davenport and D.J. Patil. (2012). Data scientist: The sexiest job of the 21st century. *Harvard Business review*. http://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century.

World Economic Forum (2016). <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>.

Appendixes

Table 2: Influence of the fourth industrial age: The academics according to the knowledge creation through Business research methods' and models' Teaching

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on Business research methods and models TEACHING Towards knowledge creation	Transfer of research methods and models knowledge to learners may be provided through the teaching of research methods and models	30 28%	61 56%	13 12%	4 4%	0 0%
	Business research views are respected to research methods and models' building	19 18%	66 61%	23 21%	0 0%	0 0%
	Transfer of "model building" knowledge to learners may be provided through teaching and other mediums with research and research practice	47 44%	45 42%	7 6%	8 7%	1 1%
	Models' building Knowledge views with respect to research and decision making teaching link	48 44%	42 39%	15 14%	3 3%	0 0%
	Transfer of business knowledge responds to research methods and models building	29 27%	52 48%	20 19%	4 4%	3 3%
	Business research have to responds business process optimization	44 42%	47 45%	8 8%	5 5%	0 0%

Table 3: Influence of the fourth industrial age: The academics according to the knowledge creation through Business research methods' and models' Learning

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on Business research methods and models LEARNING	Critical thinking stimulate students' to provide them for research and knowledge creation	22 20%	33 31%	25 23%	18 17%	10 9%
	Model building teaching is suggested by many pedagogical researchers as the most effective for MA student's learning process	25 23%	37 34%	33 31%	10 9%	3 3%
	Effective strategy for knowledge creation is a model building research into teaching	34 31%	56 52%	8 7%	9 8%	1 1%
	Operation Research into teaching as a knowledge transfer for job market	37 34%	43 40%	22 20%	5 5%	1 1%

	Teaching interact with new research approaches studying	34 31%	53 49%	16 15%	3 3%	2 2%
	Business Research interacts with business modeling	28 26%	47 44%	26 24%	5 5%	1 1%
	Business Research into teaching as a business knowledge transfer process	36 33%	53 49%	13 12%	5 5%	1 1%
	Research into teaching should not be a separate process	42 39%	46 43%	12 11%	8 7%	0 0%

Table 4: Influence of the fourth industrial age: The academics according to the knowledge creation through RESEARCH APPROACHES

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on RESEARCH APPROACHES Towards knowledge creation	Research Knowledge is a basis for all students – certainly all graduates – have to be researchers and managers	35 32%	50 46%	18 17%	4 4%	1 1%
	Knowledge of business research studying interact with teaching modeling, optimization and research practice	26 24%	53 49%	27 25%		0 0%
	A movement of knowledge to learners may be provided through teaching and other mediums with research and practice	34 31%	63 58%	5 5%	3 3%	3 3%
	Quality business research studying improves student's skills for the job market	32 30%	54 50%	15 14%	4 4%	3 3%
	Teaching of Optimization interact with business research	29 27%	45 42%	26 24%	6 6%	2 2%
	All academics have to be good researchers	30 28%	37 34%	24 22%	10 9%	7 6%
	Research as a generator of knowledge management	32 30%	54 50%	17 16%	3 3%	2 2%
	Business Research into teaching as a knowledge transfer process	34 31%	57 53%	16 15%	1 1%	0 0%
	Business modeling research into teaching should not be a separate process	23 21%	36 33%	35 32%	13 12%	1 1%
	For MBAM teaching interact with research modeling	12 11%	44 41%	23 21%	24 22%	5 5%
	Knowledge should flow from teaching to research approaches	24 22%	55 51%	15 14%	7 6%	6 6%

	Research as a generator of knowledge management	38 35%	48 44%	11 10%	8 7%	3 3%
--	---	-----------	-----------	-----------	---------	---------

Table 5: An Influence of the fourth industrial age: The Academics according to the knowledge creation through RESEARCH with PRACTICE

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on RESEARCH with PRACTICE Towards knowledge creation	Critical thinking stimulate students' to provide them for knowledge creation through research	50 38.16%	60 45.80%	17 12.98%	3 2.29%	1 0.07%
	Researchers as the most effective workforce for the job market	60 45.80%	49 34.96%	29 22.14%	0 0%	0 0%
	Quality business research improves the quality of university functions teaching	68 51.90%	47 35.88%	16 12.22%	0 0%	0 0%
	Is the knowledge-based views with respect to research- teaching –learning link	46 35.11%	42 32.06%	35 26.71%	7 05.34%	1 0.07%
	learning and teaching interact with research methods and models in practice	53 40.45%	46 35.11%	27 20.62%	5 03.82%	0 0%
	Knowledge for business research studying interact with teaching, research and research practice	66 50.38%	48 36.64%	15 11.44%	1 0.07%	1 0.07%
	Model building and optimization improve the quality of university teaching and learning process for the job market	72 54.96%	51 38.93%	8 6.11%	0 0%	0 0%
	Research improves the quality of university teaching and learning process for the job market	66 50.38%	55 41.98%	10 7.63%	0 0%	0 0%

Table 6: Influence of the fourth industrial age: The academics to knowledge creation through MBAM program transformation into business research process studying according to the job market

Variable	Indicators	Total		Total	
		Yes	%	No	%
creatio n For busine ss	Transfer of research methods and models knowledge to learners may be provided	103	95	5	5

through the teaching of research methods and models				
Business research views are respected to research methods and models' building	96	89	12	11
Effective strategy for knowledge creation is a model building research into teaching	87	81	21	19
Operation Research into teaching as a knowledge transfer for job market	80	74	28	26
Teaching interact with new research approaches studying	80	74	28	26
All academics have to be good researchers	65	60	43	40
Knowledge of research methods and models as a main for MBAM students	88	81	20	19
Interact through face-to-face settings to disseminate business research knowledge	88	81	21	19
Research into teaching should not be a separate process	73	68	35	32
Research Knowledge is a basis for all students –certainly all graduates – have to be researchers and managers	55	51	53	49
Business Research interacts with business teaching	87	81	21	19
Research as a generator of knowledge management	84	78	24	22
Business Research into teaching as a knowledge transfer process	87	81	21	19
For MBAM teaching interact with research modeling	85	79	23	21
Knowledge should flow from teaching to research approaches	82	76	26	24
Critical thinking stimulate students' to provide them for knowledge creation through research	66	61	42	39
Researchers as the most effective workforce for the job market	75	69	33	31
Quality business research improves the quality of university functions teaching	72	67	36	33
Knowledge for business research studying interact with teaching, research and research practice	88	81	20	19

	An effective way of benefit is to link business research in teaching and student-centered Learning	90	83	18	17
	Research improves the quality of university teaching and learning process for the job market	92	85	16	15

Table 7: An Influence of the fourth industrial age: Students according to knowledge creation through Business research methods and models TEACHING

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on Business research methods and models TEACHING Towards knowledge creation	Transfer of research methods and models knowledge to learners may be provided through the teaching of research methods and models	70 54.44%	25 19.10%	15 11.45%	15 11.45%	5 4.58%
	Business research views are respected to research methods and models' building	45 34.35%	32 24.43%	26 19.85%	20 15.27%	7 6.11%
	Transfer of "model building" knowledge to learners may be provided through teaching and other mediums with research and research practice	75 57.25%	30 22.90%	26 19.85%	0 0%	0 0%
	Models' building Knowledge views with respect to research and decision making teaching link	48 36.64%	28 21.37%	35 26.72%	10 7.63%	7 6.11%
	Transfer of business knowledge responds to research methods and models building	67 51.14%	19 14.50%	24 18.32%	12 9.16%	8 6.87%
	Business research have to respond to business process optimization	36 27.48%	44 33.59%	42 32.06%	7 5.34%	1 1.53%

Table 8: An Influence of the fourth industrial age: Students according to knowledge creation through Business research methods and models LEARNING

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
on Business research methods and models LEARNING	Critical thinking stimulate students' to provide them for research and knowledge creation	47 35.60%	48 36.64%	20 15.27%	10 7.63%	5 4.58%
	Model building teaching is suggested by many pedagogical researchers as the most effective for MA student's learning	55 41.98%	49 37.40%	29 22.14%	5 3.82%	0 0%

	process					
	Effective strategy for knowledge creation is a model building research into teaching	68 51.90%	37 28.24%	15 12.21%	0 0%	0 0%
	Operation Research into teaching as a knowledge transfer for job market	46 35.11%	42 32.06%	30 22.90%	9 6.87%	3 3.05%
	Teaching interact with new research approaches studying	33 25.19%	46 35.11%	29 22.14%	23 17.56%	0 0%
	Business Research interacts with business modeling	66 50.38%	43 32.82%	15 11.45%	5 4.58%	1 0.76%
	Business Research into teaching as a business knowledge transfer process	72 54.96%	51 38.39%	8 6.11%	0 0%	0 0%
	Research into teaching should not be a separate process	61 46.56%	48 36.64%	21 16.79%	0 0%	0 0%

Table 9: An Influence of the fourth industrial age: Students according to knowledge creation through RESEARCH APPROACHES

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on RESEARCH APPROACHES Towards knowledge creation	Research Knowledge is a basis for all students –certainly all graduates – have to be researchers and managers	67 51.14%	33 25.19%	21 16.03%	15 11.45%	4 3.82%
	Knowledge of business research studying interact with teaching modeling, optimization and research practice	48 36.64%	39 29.77%	24 18.32%	15 11.45%	4 3.82%
	A movement of knowledge to learners may be provided through teaching and other mediums with research and practice	73 55.72%	32 24.43%	23 17.56%	3 2.29%	0 0%
	Quality business research studying improves student's skills for the job market	50 38.17%	27 20.61%	33 25.19%	12 9.16%	8 6.87%
	The teaching of Optimization interact with business research	75 57.25%	20 15.27%	15 11.45%	18 13.74%	2 2.29%
	All academics have to be good researchers	67 51.14%	38 29.00%	21 16.03%	10 7.63%	0 0%
	Research as a generator of knowledge management	56 42.75%	32 24.43%	30 22.90%	11 8.40%	1 1.53%

	Business Research into teaching as a knowledge transfer process	49 37.40%	38 29.00%	33 25.19%	8 6.11%	4 3.82%
	Business modeling research into teaching should not be a separate process	21 16.03%	18 13.74%	41 31.30%	32 24.43%	8 6.87%
	For MBAM teaching interact with research modeling	60 45.80%	22 16.79%	45 34.35%	9 6.87%	4 3.82%
	Knowledge should flow from teaching to research approaches	60 45.80%	22 16.79%	45 34.35%	9 6.87%	4 3.82%
	Research as a generator of knowledge management	68 51.90%	41 31.30%	20 15.27%	2 1.53%	0 0%
	Research Knowledge is a basis for all students – certainly all graduates – have to be researchers and managers	73 55.72%	32 24.43%	23 17.56%	3 2.29%	0 0%

Table 10: An Influence of the fourth industrial age: Students according to knowledge creation through seven RESEARCH with PRACTICE

Variable	Indicators	Frequency and %				
		SA	A	N	DA	SD
Influence of The Fourth industrial age on RESEARCH with PRACTICE Towards knowledge creation	Critical thinking stimulate students' to provide them for knowledge creation through research	50 38.16%	60 45.80%	17 12.98%	3 2.29%	1 0.07%
	Researchers as the most effective workforce for the job market	60 45.80%	49 34.96%	29 22.14%	0 0%	0 0%
	Quality business research improves the quality of university functions teaching	68 51.90%	47 35.88%	16 12.22%	0 0%	0 0%
	Is the knowledge-based views with respect to research- teaching –learning link	46 35.11%	42 32.06%	35 26.71%	7 5.34%	1 0.07%
	learning and teaching interact with research methods and models in practice	53 40.45%	46 35.11%	27 20.62%	5 3.82%	0 0%
	Knowledge for business research studying interact with teaching , research and research practice	66 50.38%	48 36.64%	15 11.44%	1 0.07%	1 0.07%
	Model building and optimization	72	51	8	0	0

improve the quality of university teaching and learning process for the job market	54.96%	38.93%	6.11%	0%	0%
Research improves the quality of university teaching and learning process for the job market	66 50.38%	55 41.98%	10 7.63%	0 0%	0 0%

Table 11: Influence of the fourth industrial age: Students to knowledge creation through MBAM program transformation into business research process studying according to the job market

Variable	Indicators	Percent	
		Yes	No
Influence of The Fourth industrial age To knowledge creation For business research studying according to the job market	Transfer of research methods and models knowledge to learners may be provided through the teaching of research methods and models	78.15 80.15	0.00 0.00
	Business research views are respected to research methods and models' building	58.78 59.01	16.03 13.74
	Effective strategy for knowledge creation is a model building research into teaching	70.54 76.33	16.03 15.12
	Operation Research into teaching as a knowledge transfer for job market	56.41	15.27
	Teaching interact with new research approaches studying	72.52	16.03
	All academics have to be good researchers	80.14	7.00
	Knowledge of research methods and models as a main for MBAM students	67.18	9.93
	Interact through face-to-face settings to disseminate business research knowledge	56.40	9.93
	Research into teaching should not be a separate process	29.77	31.30
	Research Knowledge is a basis for all students – certainly all graduates – have to be researchers and managers	62.59	10.69
	Business Research interacts with business teaching	52.59	10.69
	Research as a generator of knowledge management	83.20	1.53
	Business Research into teaching as a knowledge transfer process	58.78	21.38

	For MBAM teaching interact with research modeling	65.64	16.03
	Knowledge should flow from teaching to research approaches	61.07	6.87
	Critical thinking stimulate students' to provide them for knowledge creation through research	72.24	12.21
	Researchers as the most effective workforce for the job market	79.38	3.82
	Quality business research improves the quality of university functions teaching	60.30	17.56
	Knowledge for business research studying interact with teaching, research and research practice	83.20	5.34
	An effective way of benefit is to link business research in teaching and student-centered Learning	93.35	0
	Research improves the quality of university teaching and learning process for the job market	83.20	0