AI application in business education: An ISM approach

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ABSTRACT

Purpose: The increasing pressure to apply AI in education makes the inclusion and evaluation of how AI-related knowledge can be imparted in higher educational institutes providing business education inevitable. Therefore, this paper goals is to propose a comprehensive model that represents the interrelationship amongst eleven various factors that affect AI education in business.

Design/methodology/approach: with the help of a robust literature review and expert interview, eleven variables were identified that helped establish the interrelation and contextual relation among said variables through interpretive structure modeling ISM and MICMAC analysis. This methodology helped in understanding how to filter selected variables influenced each other and in what order.

Finding- the major findings after following the ISM and MICMAC approach were that the variables improved employability (IE) and leadership competencies (LC) are the desired outcome, hence are at the topic of hierarchy as they are the results of modification and revisions in the higher educational structure, which adopts artificial intelligence-based concepts and the next major finding is that variables industry collaboration (IC), availability of institutional infrastructure (IIA), alignments of AI curriculum with industry requirement (AACIN) and also the orientation of business education with industry needs (ABEIN) identify themselves to be as an independent variable that requires careful handling since they enable the prodigy of such institutions to have chances of improved employment and relevant leadership skills and competencies needed for an AI-infused work environment.

Practical and Originality/Value: The research attempts to create a logical interpretation of understanding related to AI teaching in business education and, with the help of ISM, a graphical representation of variables that will help pertinent stakeholders amend and recommend change that can act as a game changer for business schools. The application of ISM can be taken as a benchmark that helps remove ambiguity.

Keywords: *AI in Business Education, Higher Educational Institutes, AI Competencies and Skill, Interpretive Structure Modeling (ISM)*

INTRODUCTION

The increased application of artificial intelligence in daily life has transformed numerous aspects of knowledge, creativity, healthcare, entertainment, and the modern-day higher education system (Batat, 2024). Its advent has also modernized functioning with its tools encompassing everything from virtual assistance to its algorithm affecting humans' decision-making volume along with promising enhanced personalization and a plethora of information regarding anything and everything.

The famous definition of AI given by McCarthy et al., (2006) comprehends its ability to facilitate computers that can impersonate human behavior and cognitive skills particularly creativity, competence, problem-solving, and intellectual decision-making skills(Abulibdeh et al., 2024 Gandhi, 2014). Hence a renewed wave of interest in AI has made it the most recent hype in the world of education and is seen as a catalyst for growth irrespective of the domain. It is rightly said by Gerlich, (2025); Abulibdeh et al., (2024) & Barrot, (2022) that rapid development of automation tools and artificial intelligence drives a substantial impact on transforming the economy at large and the future of work. Hence a provocative question regarding modern education is, are the contents of the course still relevant? More specifically is the curriculum of business education is concocting its graduates and post-graduates with the necessary skills and competencies that will warrant increased growth (Sollosy & McInerney, 2022a). It is well known that there exists an unspoken mismatch between the requisite skills needs, actual training and the actual job. Adding to business schools' failure to keep pace with rapidly evolving business needs is the herculean task of amending a change in curriculum.

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An area of increasing focus is the domain of AI, as its abilities connect the aspect of both business and everyday life, yet there remains a lack of clarity and agreement regarding what aspects of AI need to be inculcated in business education and what are the factors that affect the said integration(Flemming, 2020; Small et al., 2018). Association to advance collegiate schools of business (AACSB) contended in 2009, a documented declaration of bringing change in business management education due to the changes in the business world and the same in the year 2017, addressing the need to change to pacify the employers' demands for the business curriculum to be job ready (Kundu et al., 2024; Vinuesa et al., 2020; Wollscheid et al., 2021).

Supporting this McKinsey Global Institute evaluated that more than 70% of companies will adopt some aspect of AI technology by 2030 and stated that companies will seek employees with an understanding of AI concepts and methods, who can use this knowledge and skills to better the workplace and workspace(Chuaphun & Samanchuen, 2024; Sollosy & McInerney, 2022b; Mitri & Palocsay, 2015). Furthermore, the UN's sustainable development goal 4 SDG 4 highlights the need for quality education that prepares students for the challenges of the 21st century and industry 5.0 (*Artificial Intelligence in Education | UNESCO*, 2020.; Bakir & Dahlan, 2022; Barrot, 2022). As artificial intelligence transformation is inevitable in the business world, the stakeholders of business management education must harness this power to equip the succeeding generation of business leaders and workforce with the necessary skills and aptitude to foster development and growth in the forthcoming times of AI.

Hence this paper addresses the gap that we identified related to aligning the curriculum of business education with industry requirements. Researcher like Alshare & Sewailem, (2018; Bessen, 2018; abdul Rauf, Dadi Chen, 2023; Desai, 2023; Agbon, 2024; Batat, 2024; Al-Emran et al., 2025; Gerlich, 2025) studies various aspects that influenced the orientation of artificial intelligence in business management curriculum. A corpus of 57 scopus-indexed research papers were studied to understand the various elements that had been repeated and conceptually proved to show interrelationships among them. Very few articles exist with comprehensive coverage through different authors that have motivated us to picturize connectivity among the factors or variables that affect business education to inculcate AI concepts and tools in their curriculum. Therefore the objective of this research is to answer the following research questions:

RQ1-What are the diverse key variables that affect positive AI integration into business management curriculum?

RQ2- What are the interrelationships among the recognized key variable?

RQ3- What are the hierarchical levels of the key variables?

RQ4- How can the variables be classified into different clusters?

The remainder of the paper is arranged in units, where unit 2 is the extensive review of literature, unit 3 discusses the steps in research methodology analysis using ISM and MICMAC, unit 4 debates the interpretation and results of ISM and MICMAC and unit 5 is devoted to the implications and future research directions and lastly section 6 represents conclusion.

LITERATURE REVIEW

In the present landscape of higher institutional education, the integration of highly advanced know-how has been an unavoidable agent of change (Agbon, 2024). Technology has disrupted the traditional method of living with various kinds of innovation and creativity and a more recent technological development is the advent of the term artificial intelligence (AI) which is the current attention stealer (Adiguzel et al., 2023 & Aldosari, 2020). The presence of AI in education is evidently increasing however its addition into the curriculum is still a debated topic in the discipline of business education(Andersson, 2018; Grande & Pérez Estébanez, 2020 & Batat, 2024). AI applications like predictive analytics, decision support systems, automation, and personalization are examples of its benefits that can be customized pertaining to the demand of the discipline (Desai, 2023; Gupta & Srivastava, 2024).

Studies by Alshare & Sewailem, (2018); Chrisinger, (2019); Grande & Pérez Estébanez, (2020) highlights gaps between industry requirements and current business curricula. The requirement of the business environment

needs students who are equipped with skills and competencies that understand AI potential and limitations to operate in the Industry 5.0 (Barrot, 2022). Hence, academic institutions worldwide are embedding AI into business curricula since AI technologies are integrating into diverse business functions such as analytics in marketing and human resources to supply chain optimization and financial forecasting by the use of algorithms dictated by machine learning and natural language processing (Carvalho et al., 2019; Siau & Wang, 2018; Malik, 2024; & Kuleto et al., 2021). There exists a range of literature that contends that AI being inculcated into business education is a requirement that would harbor positive outcomes and create a benchmark for both faculties and students to progress (Alshare & Sewailem, 2018; Chuaphun & Samanchuen, 2024; Stenberg & Nilsson, 2024).

Table 1: Identified attributes accountable for AI integration into the business school curriculum

Variables	Definitions	Reference
Improved employability	AI education inculcates proficiency that is in demand across industries hence a blend of AI into business education increases skill sets, making the students/graduates more competitive in the work environment and increases the chances of opportunities.	Bessen, (2018); Cronan et al., (2018) and Rauf et al., (2021)
Leadership competencies	AI-infused business education inculcates leadership competencies such as strategic thinking, the ability to lead technologic-centric results, etc that enable the leaders to maneuver the complexities of the modern data-driven business environment.	Almaraz-López et al., (2023); Behie et al., (2023); Berman & Ritchie, (2006); Delia et al., (2014); Imam et al., (2017) and Mowery & Nelson, (1999)
Aligned business education with industry needs	The curriculum reflecting industry demands ensures that business students of the current time have acquired relevant skills and knowledge. Such alignment in curriculum bridges the gaps between academia and the practical world.	Bakir & Dahlan, (2022); Barrot, (2022); Chen, (2022); Clayton & Clopton, (2019); Deale et al., (2009); Mitri & Palocsay, (2015); O'Neill & Short, (2024).; Wood et al., (2016) and Xu & Babaian, (2021)
Faculty training and readiness	Equipping educators and faculties with technical and pedagogical skills of AI concepts is essential for increasing students' readiness. Training faculties is important to successfully integrate AI into business education.	Chrisinger, (2019); Gao et al., (2024); Grande & Pérez Estébanez, (2020); Koster et al.,(2024); Koster & Dengerink, (2008); Kundu et al., (2024); Salman et al., (2020); Toubiana, (2014) and Zawacki-Richter et al., (2019)
Students support system	A student support system includes access to training to help them adapt to the technical and analytical demands of AI-focused curricula.	Costa & Pereira, 2022; Goodyear & Markauskaite, 2009; Laura Brandt et al., 2023; Miwa et al., 2014; Rouf et al., 2016; Tang et al., 2023; Thamma et al., 2024)
Research in AI application for business education	Researching the application of AI in business education ensures that the curriculum and students both reflect innovation and reflection of emerging new trends. Research would help foster in necessary changes by analyzing real-world demands	Ahmed, (2023); Almuhaideb & Saeed, (2020); Chu et al., (2022); European Commission. Joint Research Centre., (2021); Goodyear & Markauskaite, (2009); Islam et al., (2024) and Mukherjee et al., (2023)
Industry collaboration	Partnership and collaboration are a necessity to provide students with practical exposure through internships, projects, and guest lectures.	Behie et al., (2023); Chan & Chen, (2023); Chaudhry & Kazim, 2022; Gandhi, 2014; Jaiswal et al., 2024; Paudel et al., 2021)
Enhanced critical thinking & problem-solving skills through AI	AI education equips students with tools to solve complex problems that may require critical analysis and decision-making. With more applications of AI tools, the students can use data and algorithms to make necessary decisions	Alshare & Sewailem, (2018); Barman & Das, (2020); Berman & Ritchie, (2006); Boyatzis, (1982); Cardon et al., (2024); Chrisinger, (2019); Jaiswal et al., (2024); Schiuma et al., (2022) and Weinert, (2001)
Aligned AI curriculum with industry requirement	Continuous updates to the curriculum ensure it meets the evolving demands of industries influenced by AI. Aligned AI curriculum will help students develop skills that are directly applicable in the workforce.	Behie et al., (2023); L. Chen, (2022); Clayton & Clopton, (2019); Deale et al., (2009); Mitri & Palocsay, (2015); Villeries, (2024) and Xu & Babaian, (2021)
Interdisciplinary integration	Amalgamating AI with traditional business disciplines like marketing, operations, and human resources creates a holistic curriculum and will also impact students' capacity to acquire both technical expertise and business acumen.	Akkari & Maleq, (2020); Akwei et al., (2022); Aldosari, (2020); Bates et al., (2020); Chi & Trung, (2023); Costa & Pereira, (2022); Roll & Wylie, (2016) and Sterling, (1990)
Availability of institutional infrastructure	Robust infrastructure accentuates access, institutes must invest in AI infrastructure such as computational tools, and software which will act as a resource to provide training and practical education.	(*Artificial Intelligence Tools Usage: A Structural Equation Modeling of Undergraduates' Technological Readiness, Self-Efficacy and Attitudes	Journal for STEM Education Research*, n.d.; "(PDF) Artificial Intelligence in Business Education," 2024; Carvalho et al., 2019; Chaudhry & Kazim, 2022; Falebita & Kok, 2024; Gupta & Srivastava, 2024; Islam et al., 2024; Miwa et al., 2014; Stenberg & Nilsson, n.d.; Wu et al., 2022)

The crucial objective of conducting a literature review was to examine the literature and identify critical factors that influence optimistic AI integration into business education. This exhaustive review of the previous literature has helped this research in identifying 11 variables that affects the AI integration into business education. Table 1 mentions the list of variables/ attributes and their references: an attempt has been made to develop a collective definition of each attribute based on their meanings in various literature.

RESEARCH METHODOLOGY

This paper applies the Interpretive structure modeling method. ISM is a methodological approach used to recognize and structure relationships between variables in a complex system. ISM approach enables the contextual relationship among enablers or elements or barriers or variables and organization of the enablers or barriers or variables constructed on the driving and dependence power. ISM approach provides clear understanding of the relationship among driving and dependence aptitude of the variable. Watson, (1978) developed the ISM approach which is widely applied in education, management, medicine, and engineering due to its vast suitability. Its ability to transform qualitative opinions into a systematic framework aids decision-makers in prioritizing and envisioning interdependencies (Chuaphun & Samanchuen, 2024). Researching on ISM in business management education demonstrates its effectiveness in applying the tool to understanding the challenges and outcomes, for example Cronan et al., (2018) & Kundu et al., (2024) in their respective works use ISM to analyze the curriculum design, faculty training and development, infrastructure, and collaborations as critical drivers of success.

Researchers have mentioned that in many cases, the elements or variables are not adequately found, hence to identify elements that affected the fruitful integration of AI in business education, a rigorous literature review was done through which 11 variables were identified. Experts were consulted for finalizing and instituting the interrelationship among the variables. Experts were asked to mark each variable on a scale of 5. Those elements with an average score of 3 or more were selected, leaving the study with 11 variables as the final stage. In the next stage, academicians from the management and psychology stream and business consultants with more than 8 years of experience were selected, making a total of 30 experts to brainstorm based on the research objective to check the relevance and importance and establish an interrelationship among the enablers.

Few studies done by (Nagariya et al., 2024; Mukherjee et al., 2023; Bisht et al., 2019; Kaplan & Haenlein, 2019; Anand & Bansal, 2017; Yeravdekar & Behl, 2017) have been selected as benchmarks for our research methodology, as they represent the latest advancements and clarity in utilizing the ISM technique. Condensing the steps of ISM application-

Step 1: “examining the interrelationship of attributes that are significant for increase in view-count” – the objective.

Step 2: 11 various attributes are considered for this study assuming these are the factors which helps the study to interpret what influences what. All 11 attributes are mentioned in Table I.

Step 3: Questionnaire was designed and circulated to th experts. Where the responder fills the questionnaire out of the four available options (VAXO):

1. V: if row attribute influence column attribute but not the vice-versa.
2. A: if column attribute influence row attribute but not the vice-versa.
3. X: if column and row attributes influence each other.
4. O: if none of the attributes influence each other.

32 experts out of which 17 were academicians of management and psychology descipline and the rest were scholars and business consultants were requested to fill the questionnaire. Each response is converted into SSIM (Structural Self Interaction Matrix). For the final SSIM matrix we took the mode of the values for each cell of the 32 response. Table 2 represents the SSIM.

Step 4: SSIM is further converted into IRM (Initial Reachability Matrix). Table 3 represents the initial reachability matrix (IRM). IRM is a binary representation of SSIM.

VAXO is converted into 0s and 1s by following the explicit procedure:

- 1 is entered in (i,j)th entry and 0 in (j,i)th entry of the IRM if (i,j)th entry has "V" in SSIM.
- 2. 1 is entered in (j,i)th entry and 0 in (i,j)th entry of the IRM if (i,j)th entry has "A" in SSIM.
- 3. 1 is entered in both (i,j)th and (j,i)th entry of the IRM if (i,j)th entry has "X" in SSIM.
- 4. 0 is entered in both (i,j)th and (j,i)th entry of the IRM if (i,j)th entry hass "O" in SSIM.

Step 5: It provides FRM (Final Reachability Matrix) which is obtained by transitivity law of mathematics which states that if a=b & b=c then a=c and the changed relativity is represented by 1* depicted in Table 4. The final reachability matrix is then used to partion the reachability matrix through which three different sets are obtained on the basis of the behavior of the variables. These sets can be defined as:

- Reachability set: it is the set of all those attributes that are influencing other variables row wise.
- Antecedent set: it is a set of all those attributes that are influenced by other variables column wise.
- Intersection set: this set contains elements of intersection of reachability set and antecedent set.

Table 2: Structural Self Interaction Matrix

Variable	VR1	VR2	VR3	VR4	VR5	VR6	VR7	VR8	VR9	VR10	VR11
VR1	1	V	O	O	V	A	O	O	A	V	A
VR2		1	O	O	A	A	O	A	A	A	A
VR3			1	A	A	V	X	A	O	O	A
VR4				1	X	X	O	V	O	O	A
VR5					1	O	O	O	V	O	A
VR6						1	O	X	V	A	A
VR7							1	O	X	O	O
VR8								1	V	X	O
VR9									1	A	O
VR10										1	X
VR11											1

Table 3: Initial Reachability Matrix

Variable	VR1	VR2	VR3	VR4	VR5	VR6	VR7	VR8	VR9	VR10	VR11
VR1	1	1	0	0	1	0	0	0	0	1	0
VR2	0	1	0	0	1	0	0	0	0	0	0
VR3	0	0	1	0	0	1	1	0	0	0	0
VR4	0	0	1	1	1	1	0	1	0	0	0
VR5	0	0	1	1	1	0	0	0	1	0	0
VR6	1	1	0	1	0	1	0	1	1	0	0
VR7	0	0	1	0	0	0	1	0	1	0	0
VR8	0	1	1	0	0	1	0	1	1	1	0
VR9	1	1	0	0	0	0	1	0	1	0	0
VR10	0	1	0	0	1	1	0	1	1	1	1
VR11	1	1	1	1	1	0	0	0	0	1	1

Table 4: Final Reachability Matrix

Variable	VR1	VR2	VR3	VR4	VR5	VR6	VR7	VR8	VR9	VR10	VR11	Driving
VR1	1	0	0	0	0	0	0	0	0	0	0	1
VR2	1	1	0	0	0	0	0	0	0	0	0	2
VR3	1*	1*	1	1*	1*	1*	0	1*	0	1*	0	8
VR4	1*	1*	0	1	1*	1*	0	0	1*	0	0	6
VR5	1*	1*	0	1	1	1*	0	0	0	1*	0	6
VR6	1*	1*	1	1	1	1	0	1*	0	1*	0	8
VR7	1*	1*	0	0	0	0	1	1*	0	1	1	6
VR8	1*	1*	0	0	1	1	0	1	1*	1*	0	7
VR9	1*	1*	1	1	1	1	0	1	1	1*	0	9
VR10	1*	1*	0	1	1	1	0	1*	0	1	0	8
VR11	1*	1*	0	0	1	0	0	0	0	1*	1	6
Dependence	11	10	3	6	8	7	1	6	3	8	2	

LEVEL PARTITIONING, ISM MODEL & MICMAC ANALYSIS

Level partitioning is the process of structuring the given variables into various hierarchical level based on their reachability and dependence relations as shown in Table 5. It helps in understanding which variables are foundational and which are influenced by others, and in order to interpret the results. The final reachability matrix table is utilized to assign levels that help make the graphical depiction, of how the variables are interrelated. The model displays a five level hierarchical structure built upon the previous one, with Leadership competencies at the top as the ultimate goal.

Level I- V1is the factor that intersects on the same value of reachability set hence it is assigned level 1. This is called the first iteration. This means these elements appear only in their own reachability sets, which means they do not influence others and are the most dependent factors.

Level II- V2 is influenced by V1 but has its own reachability to subsequent factors. IE builds upon LC, meaning leadership competencies enhance employability. This factor sets the foundation for skills and knowledge alignment with industry demands.

Level III- Variables 7, 8, and 11 are the elements are driven by the foundational levels (LC and IE) and are crucial in determining the robustness of the education and training ecosystem. V(11) ensures the necessary resources, technological frameworks, and AI-based infrastructure. V(10) fosters cooperation between academia and industry for curriculum enhancement and employability alignment. V(8) focuses on enhancing cognitive and analytical skills through AI-driven learning strategies**.**

Level IV- After removing the level factors of levels 1,2 & 3, the remaining factors are Variables 4, 5, and 6, it is the intermediary factors that link the top and bottom levels. SSS (4) ensures student engagement, mentoring, and access to AI-based learning support. V(5) focuses on faculty readiness, ensuring that instructors are equipped with AI-based teaching methodologies and industry collaboration insights. V(6) fosters AI-driven research for curriculum evolution and integration.

Level V- Finally this is the last run of iteration after removing the variables of level 4. The Variables 3, 9, and 10: These are at the highest level and are the most dependent factors. V(9) ensures that AI-related curricula are directly relevant to business and industry needs. V(7) emphasizes the importance of cross-disciplinary collaboration for a holistic education approach. V(3) aligns business education curricula with evolving industry demands, ensuring that graduates are prepared for leadership roles in AI-driven markets.

Variable	Reachability Set	Antecedent Set	Interaction Set	Level
1	{1, 2, 11, 7, 8, 4, 6, 9, 10, 3}	{1}	{1}	I
2	{2, 11, 7, 8, 4, 6, 9, 10, 3}	{1, 2}	{2}	II
3	{3}	{1, 2, 11, 7, 8, 4, 6}	{4, 6}	V
4	{4, 9, 10, 3}	{1, 2, 7, 8}	{7, 8}	IV
5	{5, 9, 10, 3}	{1, 2, 7, 8}	{7, 8}	IV
6	{6, 9, 10, 3}	{1, 2, 7, 8}	{7, 8}	IV
7	{7}	{1, 2}	{2}	III
8	{8}	{1, 2}	{2}	III
9	{9}	{1, 2, 11, 7, 8, 4, 6}	{4, 6}	V
10	{10}	{1, 2, 11, 7, 8, 4, 6}	{4, 6}	V
11	{11}	{1, 2}	{2}	III

Interpretive Structure Modeling Analysis

In interpretive structure modeling a digraph is used to represent the variables hierarchically structurally. The diagrams illustrate the relationship between different factors in a system arranged in levels based on their influence and dependence. This graph embodies insights into how each factor or variable is interrelated and how each factor contributes to the system. In this section, the ISM model is conversed in detail.

Level 1 & 2- At the highest level, the two factors that act as key drivers and the ultimate influential factor to other systems is Improved employability (IE) and leadership competencies (LC). With the influence of change in curriculum design, faculty training, collaborations, and integration of AI-driven business education the chances of students' employment increases which acts as a point of catalyst to attract more students(Small et al., 2018; Rauf et al., 2021; Malik, 2024; Sohaee et al., 2024).

Leadership Competencies are the expertise that should be inculcated in students as these competencies shape the work environment dynamics. The competencies are an indirect effect of the curriculum alignment, faculty training and critical thinking skills which all can be altered only through education (Boyatzis, 1982; Weinert, 2001; Schiuma et al., 2022). With correct education neccesaary competencies can be inculcated in students who will be holding jobs that affects society and if universities church out unprepared graduates it will lead to downfall of growth and scope.

These factors Aligned AI curriculum with industry requirements (AACIN), interdisciplinary integration (II), and availability of institutional infrastructure (IIA) serve as the foundation for business education transformation, They do not directly influence any other variables but are crucial for ensuring a functional and AI ready academic system.

Level 3-The factors that Industry collaboration (IC), availability of Institutional Infrastructure (IIA) and improved critical thinking and problem-solving skills through AI (CT&PSAI) are the variables that contribute to many lower level dependencies but are above them as they help contribute shape to factors of level 1. Industry collaboration bridges the gap between academia and industry which directly affects the research and business alignment.(Jaiswal et al., 2024) their paper contended that gaps are identified through such collaboration and relevant changes can be brought through the curriculum updation.

Availability of Institutional Infrastructure (IIA) estates that are inadequate availability of AI-based infrastructure for business education is also imperative as they attract quality investment from the government and from citizens who understand the current landscape shift towards artificial intelligence (Wu et al., 2022). There are several examples of the availability of infrastructure for AI-based education, that has AI-focused labs, centers that focus on research, and business accelerators that provide resources and mentorship for funding AI-based business startups that are launched by said universities, through organizing events(Andersson, 2018; Erik Brynjolfsson, 2017; Flemming, 2020; Sollosy & McInerney, 2022a; Vinuesa et al., 2020)

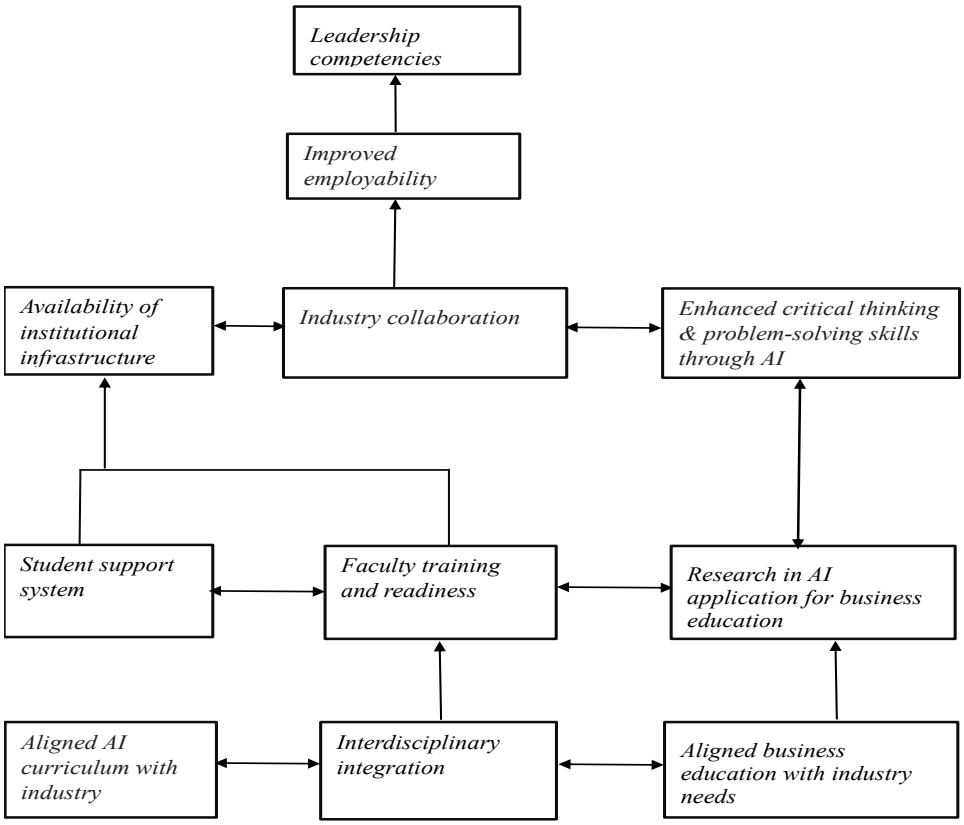

Figure 1: ISM Model

Enhanced critical thinking and problem-solving skills through AI interprets that with a robust Ai influenced business education that is also influenced by faculty training and interdisciplinary AI research it fosters advancement into students' analytical and critical thinking skills which would be pertinent to mitigate challenges brought by AI integration and will increase the chances improved employment and new development in the field of education that fosters growth.

As the digraph shows these factors are heavily driven as they have more incoming arrows than outgoing arrows which also says that these are the effects of imparting relevant education which has a deeper impact in the long term on a candidate's employment and advanced probabilities of collaborations.

Level 4- In this level of Student support system (SSS), faculty training and research (FTR) Research in AI application for business education (RAI&BE), variables influence and are influenced by other variables, acting as a bridge between strategic and operational goals. With student's support system aspects curtailing to assessments, mentoring, and guidance is critical and is heavily dependent on faculty training and aligned business education (level 4) and also impacts interdisciplinary integration (Level 5).

Research in AI application for business education (RAI&BE) explores new enhanced opportunities inviting scholars to conduct important research, scholars help identify societal issues and gaps that can be remedied through relevant changes in educational organizations (Laura Brandt et al., 2023; Neumann et al., 2024; Yeravdekar & Behl, 2017).

Level 5- The factors at this level are heavily influencing as they consists of elements that are foundational to the change and also play a critical role in shaping lower-level variables. Aligned business education with industry needs (ABEIN) ensures business education is updated with real-world work needs and expectations and addresses the skill gaps. The factors that are a pathway to achieve this are AI curriculum influence business education, proper faculty training by industry experts, and interdisciplinary integration to face and solve challenges that might arise.(Gandhi, 2014; X. Chen et al., 2020; Kuleto et al., 2021) This will not only drive

growth but also improve employability and inculcate leadership competencies among the students who will act as the workforce in the future.

In order to provide a workforce that is competent with industry needs and requirements, it is non-negotiable that institution faculty must also be equipped with training in AI-based teaching tools to update themselves and students as well. These variables affect students' support system and curriculum alignment as both faculty training and student development go hand in hand.

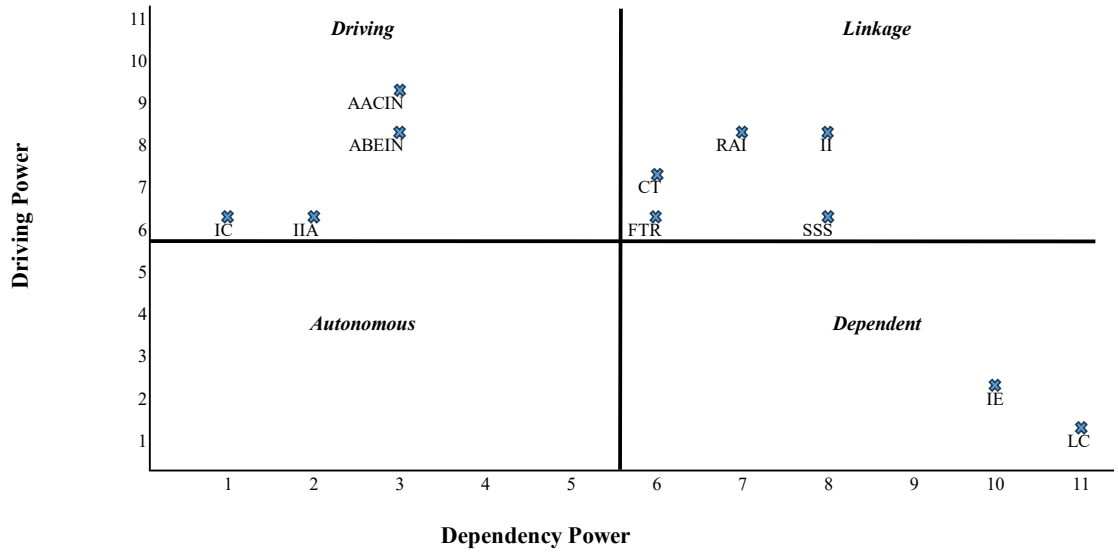

Figure 2: MICMAC Analysis

Description of mic mac analysis

MICMAC analysis is used to categorise the variables into four clusters:

- Autonomous enables- (low driving and low dependence)
- Dependent enabler- (low driving but high dependence)
- Linkage enablers- (high driving and high dependence)
- Independent enablers (High driving but low dependence)

With the help of dependence power which is a summation of all the columns and also depicts the number of elements that an individual variable influences, whereas driving power is the summation of all rows and represents the number of elements influencing a variable which is expressed in Table 4 MICMAC analysis was plotted as shown in Figure 2

- In the autonomous region (cluster I), the variables with low driving power and low dependence power are placed, which signifies less or no impact on the system. As shown in Figure 2 there are no autonomous factors, thus their absence suggests that all variables in the analysis play an active role in the dynamic system.
- In the dependence region (cluster II), the variables improved employment (IE) and Leadership competencies (LC) identified as having low driving power but high dependence hence they are reactive than proactive. Hence variables hold the topmost position in the ISM model as they do not drive change themself.
- In the linking region (cluster III), the variables of high driving and high dependence power are listed. These variables need attention as they are driving other variables and are also guided by other variables. The variables researched in AI application for business education (RAI-BE), faculty training, and readiness (FTR), student support system (SSS), enhanced critical thinking and problem-solving skills through AI CT&PSAI and interdisciplinary integration (II) work in a parallel cluster in in ISM model and are both

influence and influenced by other variables, often forming a feedback loop as they are considered to be unstable but are crucial to bring stability.

- In the independent region (cluster IV), variables in this cluster require attention as they have high driving power but low dependency hence, leadership competencies, variables aligned AI curriculum with industry requirement (AACIN), industry collaboration (IC), aligned business education industry needs (ABEIN) and availability of institutional infrastructure (IIA), are capable of bringing change to other enablers and if not checked can change the system dynamically as they derive the change in the system hence, form the base of ISM model.

DISCUSSION ON THE IMPLICATION

With the contribution of different researchers in the area under this study can be condensed into theoretical and practical implications along with an action plan to accommodate AI in the business education curriculum.

Theoretical implication

This paper contributes theoretically and practically in different ways. The theoretical background is well established in the literature, with the help of the application of ISM and MICMAC ensures its relevance and validates the theoretical implication through a model that helps in structuring AI-driven business education. A strong theoretical implication from this is, it accentuates that higher-order cognitive skills such as leadership and employment are not the standalone outcomes but rather the result of foundational knowledge and training led by the curriculum. Factors like faculty readiness and AI curriculum research play crucial parts in equipping students with fundamental prerequisites for equipping the institutional infrastructure for the successful adoption of AI in business education. Adding to this systematic order thinking of ensuring that artificial intelligent education remains industry relevant and application derived from industry collaboration that enables a holistic transformation approach that strengthens business education's response towards industry needs.

Practical implication

ISM model is developed in this paper can serve as a guide to plan a structured action according to the hierarchical dependencies based on driving-dependence analysis from MICMAC analysis. The plan ensures a systematic and sustainable implementation of artificial intelligence in business education.

Establish foundational infrastructure

The positive integration of AI in business education requires strong institutional and policy support, particularly for the most critical yet dependent factors: AI curriculum alignment, interdisciplinary integration, and institutional infrastructure. To ensure that AI education meets industry expectations, institutions should conduct expert consultations and benchmark AI courses against global standards such as association to advance collegiate schools of business (AACSB) and the european quality improvement system (EQUIS) while maintaining flexible course structures that adapt to emerging trends. Interdisciplinary collaboration is essential as synchronized efforts between the business, computer science, and data science faculties are imperative to create cross-disciplinary AI courses. This approach can be reinforced by integrating AI-driven case studies across finance, marketing, HR, and operations, alongside faculty exchange programs for knowledge transfer. Additionally, developing AI-ready infrastructure is crucial—business schools must invest in AI labs equipped with cloud computing, machine learning tools, and business analytics software while forming strategic partnerships with tech companies like IBM and Google for access to cutting-edge AI platforms. Faculty and students should be provided with comprehensive AI training programs, ensuring proficiency in AI tools and methodologies, ultimately enabling a smooth transition into AI-driven business education.

Strengthening AI adoption mechanism

Industry collaboration and critical thinking augmentation are key enablers of AI-integrated business education. Institutions should partner with corporations for AI-based internships, establish research incubators for real-world AI projects, and host hackathons with industry mentors. To enhance problem-solving skills, AI-driven simulations, predictive analytics, and decision-making modules should be embedded into management courses.

Gamification and real-world case studies can further train students in AI-powered business problem-solving.

Enhancing research and knowledge

This phase focuses on strengthening AI research in business education while ensuring students adapt seamlessly to AI-driven learning. Institutions should encourage faculty-led research in AI applications for business, secure grants for AI-driven business innovation, and collaborate with leading AI-focused academic institutions for joint research projects. To support students, universities can develop AI-based personalized learning platforms that adapt to individual learning styles and needs. Establishing AI mentorship programs where students connect with industry professionals can provide practical exposure and career guidance. Additionally, organizing AI literacy workshops for students from non-technical backgrounds will help bridge the knowledge gap and enhance their ability to work with AI-driven tools. These initiatives will create a research-driven, student-friendly AI learning ecosystem that not only improves AI competency among business students but also ensures that they are equipped with the necessary skills to apply AI in real-world business scenarios, making them future-ready professionals.

Strategic Drivers

To ensure faculty preparedness and continuous curriculum evolution for AI integration, institutions must focus on faculty training and alignment with industry needs. Business faculty should receive AI upskilling certifications and attend workshops on AI-powered teaching methodologies to enhance their instructional approach. Developing a structured AI teaching framework that incorporates ethical AI considerations will further ensure responsible AI education. Additionally, aligning business education with industry needs requires collaboration with AI professionals through advisory boards that guide curriculum updates. Regular revisions should be made to incorporate evolving AI trends in business, ensuring that students gain relevant, up-to-date knowledge. Introducing AI-driven business analytics courses will equip students with practical skills in data-driven decision-making. By strengthening faculty expertise and aligning educational programs with industry demands, institutions can effectively integrate AI into business education, preparing students to navigate the rapidly evolving business landscape with AI-driven solutions.

Achieving leadership and employability outcomes

The long-term outcomes of AI integration in business education focus on developing leadership competencies and enhancing employability. AI-driven leadership and strategic decision-making courses will equip students with the skills to navigate complex business environments. Capstone projects incorporating AI-driven business strategies will provide hands-on experience, while AI ethics and governance training will ensure responsible leadership. To improve employability, AI-based career counseling, and job placement services will guide students toward AI-related career opportunities. Institutions can further support innovation by organizing AI business challenges that encourage students to solve real-world problems. Additionally, AI-backed entrepreneurship incubation centers will foster startups and business ventures, helping students leverage AI for business growth. By embedding AI into leadership training and career development, institutions will produce graduates who are not only job-ready but also capable of leading AI-driven transformations in the corporate world.

CONCLUSION

Higher educational institutes serve as catalysts to society for bringing transformation, ensuring that business education evolves in tandem with industry advancements, predominantly in areas like AI adoption, leadership development and industry-academia collaboration. The same is supported by the ISM model putting AI adoption in curriculum and industry needs on top elucidates the skills gap and creates a great synergy between business education and real-world business needs. Facilitating a curriculum change with an interdisciplinary approach can expand corporate internship and opportunities, all this cannot happen with inadequate availability of institutional infrastructure that represents both stakeholders for example faculties, business teaching faculties continuous training through faculty development programs fosters an impression that the students are also trained by faculties who understand the application of artificial intelligence. The most logical and strategic

roadmap is to bring change in society through the curriculum that will ultimately lead to increased employment opportunities as such students' leadership competencies are advanced due to the updation of the current business education curriculum.

STATEMENT OF CONFLICTING INTERESTS

The author(s) declared no probable conflicts of interest concerning this research, authorship, and/or publication of this study.

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