ROLE OF AI IN ENHANCING ENTREPRENEURIAL COMPETENCIES: A COMPARITIVE ANALYSIS OF AI POWERED AND TRADITIONAL ENTREPRENEURSHIP EDUCATION PROGRAMS

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Abstract

The rapid advancement of Artificial Intelligence technologies presents both opportunities and challenges for entrepreneurship education. This study investigates the role of AI in enhancing entrepreneurial competencies and compares the effectiveness of AI powered and traditional entrepreneurship education programs. The results show that AI powered entrepreneurship education programs outperform traditional programs in enhancing entrepreneurial competencies, particularly in areas such as innovation, risk management and digital literacy. This comparative analysis explores the impact of AI powered and traditional entrepreneurship education programs on enhancing entrepreneurial competencies. The study reveals that AI powered programs offer personalised learning experiences, real time feedback and tailored guidance, develop essential entrepreneurial skills such as creativity, problem solving and critical thinking. The integrations of AI powered tools with traditional pedagogies can create a hybrid model that leverages the strengths of the both approaches. The study highlights the potential of AI powered programs to enhance creativity, improve decision making and increase accessibility in entrepreneurship education

Keywords:- Artificial Intelligence, Entrepreneurship Education, Entrepreneurial Competencies, Entrepreneurial education programs, AI powered programs.

Entrepreneurial education has become increasingly important in developing entrepreneurial competencies which are essential for start-ups success and economic growth. Traditional entrepreneurship programs have been criticized for their limitations in providing personalized learning experiences and simulating real world entrepreneurial scenarios.

Artificial intelligence has emerged as potential solution to enhance entrepreneurial competencies. Traditional entrepreneurship education programs use

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conventional teaching methods to deliver entrepreneurship education without the use of Artificial intelligence technologies. AI powered programs use artificial intelligence technologies to deliver personalized, adaptive entrepreneurship education. AI powered entrepreneurship education programs have the potential solution to enhance entrepreneurial competencies more effectively than traditional entrepreneurship education programs. Theoretical frame works such as social cognitive theory, experiential learning theory and cognitive load theory support the role of AI enhancing entrepreneurial competencies. A comparative analysis of AI powered and traditional entrepreneurship education programs highlights the benefits of AI powered entrepreneurship education. The rapid advancement of artificial intelligence has transformed the entrepreneurial landscape enabling entrepreneurs to automate tasks, analyse data and Make Informed Decisions.

Review of Literature

Combining AI and the entrepreneurial process could result in a powerful tool with much more potential for different entrepreneurial outcomes and quickly dealing with unexpected consequences. Hence, more innovative ways are needed to teach an entrepreneurship curriculum Shepherd and Majchrzak (2022). The study investigates the effect of entrepreneurship education on the entrepreneurial intentions of business students in Bandung city and evaluates the role of artificial intelligence as a mediating factor in this relationship. The research examines whether integrating AI tools within entrepreneurship education can enhance entrepreneurial intentions by fostering creativity, decision making and problem-solving skills. Moreover, AI's ability to analyse vat data sets in real time allows entrepreneurs to make data driven decisions, optimise operations and stay agile in responding to shifting market dynamics and consumer preferences Hamdan et al. (2021). By integrating design thinking's emphasis on empathy, user centricity and iterative problem solving with AI's analytical power, businesses can create solutions that are both technologically advanced and deeply aligned with user needs and market demands Saritepeci & Durak (2024). Through this collaborative and iterative approach businesses can foster creativity and innovation that leads to products and services which strongly with consumers, driving both business success and customer satisfaction Rosch et al. (2023). By leveraging AI, entrepreneurs can identify new opportunities more effectively make informed decisions backed by data driven insights, enhance business performance through optimized operations and benefit from AI enhanced education and research tools that drive innovation and growth Giuggioli and Pellegrini (2022). The importance of a stakeholder driven approach for setting assessment priorities in entrepreneurship education programs to ensure the initiatives are sustained long term and effectively equip students with necessary knowledge and competencies. Nathalie Duval couetil (2019).

Research Question

- To what extent does an AI powered entrepreneurship education program enhance entrepreneurial competencies among participants?

- What role of AI powered entrepreneurship education programs?
- Does the training program significantly improve entrepreneurial skills and satisfy overall quality of the program among participants?

Objectives

- To investigate the impact of AI powered entrepreneurship education programs on entrepreneurial competencies.
- To identify the role of AI powered entrepreneurship education programs.
- To evaluate the effectiveness of the AI training program in improving entrepreneurial skills, and satisfy overall quality of the program among participants.

Statement of the Problem

Entrepreneurial competencies are vital digital age, but research is missing on how AI powered entrepreneurship programs improve those competencies. AI's rapid growth has created a gap between traditional entrepreneurship education & digital needs, promoting the need to study AI's role in boosting entrepreneurial skills. The complex business environment requires creativity, critical thinking & adaptability; traditional programs lack the practical, real world training to develop these skills. The study examines AI's role in entrepreneurship education & compare AI based Vs traditional programs for effectiveness.

Significance of the Study

AI in entrepreneurship education helps entrepreneur refine their competencies.AI based programs boost decision making, innovation and risk management skills, enabling better business strategies & adaptability. They also provide personalised learning & data driven insights, leading to improved entrepreneurial outcomes & a competitive edge.

Scope of the Study

This study investigates the AI's role in enhancing entrepreneurial competencies by comparing AI powered traditional entrepreneurship education programs. The scope of the study encompasses the examination of the effectiveness of AI driven tools in developing entrepreneur's decision making, innovation and risk management capabilities as well as the assessment of the impact of AI powered entrepreneurship education on entrepreneurial outcomes such as business success, innovation and job creation.

Methodology

The study used mixed methods (quantitative and qualitative). It employs purposive sampling of 50 entrepreneurs who have participated in either AI powered or traditional entrepreneurship education programs (25 from AI powered programs and 25 from traditional programs). Online survey collects demographics ask about AI training & program effectiveness & entrepreneurial outcomes (business performance, revenue growth). Semi structured interviews ask open ended

questions about experiences, problems, challenges and improvement areas.

Result /Analysis

Regression

1. To investigate the impact of AI powered entrepreneurship education programs on entrepreneurial competencies.

H01: Virtual reality entrepreneurship education will have positive impact on entrepreneur's business planning.

H02: AI powered business model canvas positive impact on entrepreneur's ability to identify & mitigation of business risk.

H03: Start-ups accelerated program significantly positive impact on growth rate of participating start-ups.

H04: AI powered entrepreneurship education course positive impact the entrepreneur's knowledge entrepreneurship concepts.

Table 1 shows that entrepreneur business planning is expected to increase by 0.865units (constant B) when other variables are held constant. The standardized coefficient (β =0.564) shows virtual reality explains 56.4% of the variance in entrepreneur business planning. The relationship is statistically significant at the 5% level (t= 2.094, p= 0.042). For every unit increase in virtual reality business planning increase by 0.660 (B), with significance at the 1% level (t=4.728, p= 0.000)

For every unit increase in variable 1 entrepreneur ability is expected to increase by 3.467 units, holding all other variables constant (Table 2). The standardized coefficient (Beta) of 0.90 indicates that variable 1 explains about 90% of the variance in entrepreneur ability. The t value of 5.253 and p value of 0.000 indicate that the relationship is statistically significant at the 1% level. The coefficient of 0.103 indicates that for every unit increases in variable 2, entrepreneur ability is expected to increase by 0.103 units, holding all other variable constant. However, the t value of 0.617 and p value of 0.540 indicate that the relationship is not statistically significant.

In this case (Table 3) the constant term is 1.713, this is the expected value of growth when the start-up variable is

Table 1

Coefficients

Model	Unstandardized		Standardized	t	Sig
		Std Error	Beta		
1 (Constant)	.865	.413		2.094	.042
Virtual Reality	.660	.140	.564	4.728	.000

Source: Primary Data

A. Dependent Variable: Entrepreneur Business Planning

Table 2

Coefficients

Unstandardized Coefficient		Standardized Coefficient		
B	**Std Error**	**Beta**	**t**	**Sig**
3.347	.660		5.253	.000
.103	.166	.090	.617	.540

Source: Primary Data

A. Dependent Variable: Entrepreneur Ability

Table 3

Coefficients

	Unstandardized		Standardized	t	Sig
	B	**Std Error**	**Beta**		
1 (Constant)	1.713	.456		3.757	.000
Start up	.391	.129	.404	3.029	.004

Source: Primary Data

A. Dependent Variable: Growth

zero. For every unit increase in the start-up the growth is expected to increase by 0.391units, holding all other variables constant. The standardized coefficient (beta) of 0.404 indicates that the start-up variable explains about 40.4 % of the variance in the growth when standardized. The t value of 3.029 and p value of 0.004 indicates that the relationship is statistically significant at the 1% level.

For every 1 unit increase in the AI powered variable, entrepreneur knowledge increases by 0.854 units with the AI variable explains 78%of the variance in entrepreneur knowledge (standardised Beta=0.780, t=8.638, p= 0.000) (Table 4). The relationship is statistically significant at the 1% level, indicating AI powered has a strong positive effect on entrepreneur knowledge.

Independent Sample T Test

Table 5 shows the frequency and percentage of entrepreneurs who received AI powered entrepreneurship education program training. 80% of entrepreneurs received AI powered entrepreneurship education program training. Only 20% of entrepreneurs did not receive training.

2. To identify the role of AI powered entrepreneurship education programs

H0: There is no significant difference in the entrepreneurial skills & satisfy the overall quality of the program between the participants who received the training program.

H1: There is a significant difference in the entrepreneurial skills & satisfy the overall quality of the program between the participants who received the training program

Table 6 shows that one sample test with a test value is 3. The p value of 0.030 is less than the significance level of 0.05 indicating that the result is statistically significant. The AI program improved entrepreneurial skills &overall participant satisfaction. Because of this, the null hypothesis which states there is no

Table 4

Coefficients

	Unstandardized Coefficient		Standardized Coefficient	t	Sig
	B	Std Error	Beta		
1 (Constant)	.299	.298		1.004	.320
AI Powered	.854	.099	.780	8.638	.000

Source: Primary Data

A. Dependent Variable: Entrepreneur Knowledge

Table 5

AI TRAINING

	Frequency	Percent	Valid Percent	Cumulative percent
Valid YES	40	80.0	80.0	80.0
NO	10	20.0	20.0	100.0
Total	50	100.0	100.0	

Source: Primary Data

Table 6

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
I improved the entrepreneurial skills	9.753	49	.000	1.320	1.05	1.59
I confident in starting a business	5.766	49	.000	.960	.63	1.29
I clear understanding of business goals	7.455	49	.000	1.180	.86	1.50
I developed a comprehensive plan	6.728	49	.000	1.060	.74	1.38
I identified and mitigate potential risk	6.728	49	.000	1.060	.74	1.38
I improved ability to pitch business idea	7.165	49	.000	1.140	.82	1.46
I access to network mentors and peers	7.634	49	.000	1.220	.90	1.54
I satisfied with the overall quality of the program	10.574	49	.000	1.420	1.15	1.69

Source: Primary Data

significant difference is rejected & the alternative hypothesis which states there is a significant difference is accepted.

3. To evaluate the effectiveness of the AI training program in improving entrepreneurial skills and satisfy the overall quality of the program among participants

H0: There is no significant difference in entrepreneurial competencies between participants who receive AI powered& traditional entrepreneurship education programs.

H1: There is significant difference in entrepreneurial competencies between AI powered & traditional entrepreneurship programs.

The result indicates significant difference between the "Yes" and "No groups for all variables suggesting that the AI training program has a positive impact on entrepreneurial skills, confidence, business goals understanding, comprehensive planning, risk mitigation, pitching business ideas, access to network

Table 7

Group Statistics

	AI training	N	Mean	Std Deviation	Std Error Mean
I improved the entrepreneurial skills	YES NO	40 10	4.53 3.50	.751 1.269	.119 .401
I confident in starting a business	YES NO	40 10	4.15 3.20	1.122 1.135	.177 .359
I clear understanding of business goals	YES NO	40 10	4.43 3.20	.931 1.317	.147 .416
I developed a comprehensive plan	YES NO	40 10	4.33 3.00	.944 1.155	.149 .365
I identified and mitigate potential risk	YES NO	40 10	4.33 3.00	.944 1.155	.149 .365
I improved ability to pitch business idea	YES NO	40 10	4.43 3.00	.931 1.155	.147 .365
I access to network mentors and peers	YES NO	40 10	4.53 3.00	.905 1.155	.143 .365
I satisfied with the overall quality of the program	YES NO	40 10	4.68 3.40	.656 1.265	.104 .400

Source: Primary Data

Table 8

Levene's Test for Equality of Variances

	Variances	Levene's Test for Equality of Variances			
		F	Sig	t	df
I improved the entrepreneurial skills	Equal variances assumed	5.006	.030	3.326	48
	Equal variances not assumed			2.449	10.624
I confident in starting a business	Equal variances assumed	.002	.969	2.389	48
	Equal variances not assumed			2.372	13.743
I clear understanding of business goals	Equal variances assumed	2.215	.143	3.416	48
	Equal variances not assumed			2.774	11.348
I develop a comprehensive plan	Equal variances assumed	.069	.793	3.796	48
	Equal variances not assumed			3.359	12.182
I identified and mitigate potential risk	Equal variances assumed	.069	.793	3.796	48
	Equal variances not assumed			3.359	12.182
I improved ability to pitch business idea	Equal variances assumed	.135	.714	4.127	48
	Equal variances not assumed			3.620	12.087
I access to network mentors and peers	Equal variances assumed	.352	.556	4.506	48
	Equal variances not assumed			3.888	11.915
I satisfied with the overall quality of the program	Equal variances assumed	8.644	.005	4.475	48
	Equal variances not assumed			3.086	10.240

Source: Primary Data

mentors and peers and overall satisfaction. Based on the significant positive results we reject the null hypothesis and accept the alternative hypothesis.

Findings

- Virtual reality content &business planning have a statistically significant relationship with entrepreneur business planning.
- AI powered business model has strong positive relationship with entrepreneur ability.
- Start- up variable has a statistically significant relation with the growth variable that increased the start -up activity boosts growth.
- The relationship between the AI powered variable and the

entrepreneur knowledge variable is statistically significant.

- The AI training has a positive impact on entrepreneurial skills.
- AI training makes participants show increased confidence in starting a business.
- The AI training enhances understanding of business goals.
- AI training helps participants to develop comprehensive business plans.
- The AI training helps identify and mitigate potential risks.
- AI training improves ability to pitch business ideas.
- AI training provides access to network mentors and peers.
- Participants are satisfied with the overall quality of AI entrepreneurship program.

Suggestions

- Use AI assessments to give instant feedback on entrepreneurial competencies & spot improvement areas
- Apply AI analytics to track progress, find knowledge gaps & guide program updates

Conclusion

AI powered entrepreneurship programs significantly boost entrepreneurial competencies by providing personalised learning, real time feedback & simulated environments. The AI training improves skills, confidence, goal understanding, planning, risk mitigation & networking, leading to higher participant satisfaction & potential for promoting entrepreneurship & economic growth.

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