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LEVERAGING ENTREPRENEURIAL ARTIFICIAL INTELLIGENCE TO ENHANCE URBAN AND REGIONAL DYNAMICS: A STUDY ON INNOVATION, ECONOMIC GROWTH, AND SMART CITY DEVELOPMENT IN ANAMBRA STATE NIGERIA

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Abstract

Growing rates of urbanization along with the emerging concept of smart cities intensified the dependence on the application of AI solutions for solving multifaceted urban issues. In the present research, a descriptive survey approach was used with an analytical focus to analyze the AI-based entrepreneurial activities and to identify the effects on innovation, smart cities and infrastructure. One hundred and twenty-four participants comprising technology professionals, new venture creators, and policymakers completed the study. Data were collected using the Entrepreneurial Artificial Intelligence Scale, validated through expert reviews, and with a reliability coefficient of 0.83. Participants were to rate AI's impact using a 4 options Likert scale while data analysis included descriptive statistics, and ANOVA to compare the scores between occupations and different levels of education. Studies show that Entrepreneurial Artificial Intelligence (EAI) also contributes to improved process performance in managing cities as well as increases economic growth since it builds innovation platforms and generates new markets. In addition, AI-based smart city solutions enhance sustainability, efficiency and quality of life using intelligent construction of city infrastructures, big data and data-driven administration and citizen-centric services. By focusing on these research contributions and contributions of EAI as a whole, the study concludes by presenting policy implications for how policy-makers and urban planners could effectively utilize AI techniques for improving the regional development as well as achieving sustainable urbanism.

Keywords: Entrepreneurial Artificial Intelligence, Urban Development, Regional Development, Smart Cities, Sustainable Development.

Introduction

There is growing understanding of Entrepreneurial Artificial Intelligence as a powerful agent of change in cities and regions. To develop intelligent city and to enhance infrastructure, economic productivity and for achieving sustainable development smart technologies are being integrated into cities. Entrepreneurial AI plays an essential role in generating innovation in the urban and regional management by preparing for appropriate business models and enhancing productive services. AI technologies help in building smart cities through collection of superior data analytics, machine learning services and automation. For instance, the AI enabled platforms are used in the transportation of people by improving on the traffic patterns, thus decreasing the traffic jams. Olugbade et al (2022) indicate that in smart transportation systems, the AI algorithms analyses traffic patterns and ensures proper urban traffic flow. These innovations also enhance life that at the same time open up potential markets for the new breed of entrepreneurs spearheading AI-powered products that address urban issues.

Consequently, AI-powered smart grids are utilised for improving energy efficiency in the processes occurring in the urbanised great world. The smart grid, according to Shatnawi et al (2020), apply AI in addressing demand side balancing, to reduce energy demand from cities while at the same time ensuring an adequate energy supply. The application of artificial intelligence in energetic management by startups boils down to innovation since it scales renewable and efficient systems for urban growth. Further, AI provides solutions to some critical areas such as public safety and security; intelligent security cameras and incident recognition systems. Real time monitoring of the flow of the city: Using AI, the public security agencies can respond to incidents more effectively. Ahmed et al (2023) concluded this study by asserting that existence of AI systems have the effect of improving public security while at the same time new business opportunities exist within the smart surveillance space.

It is important to underscore here that the use of entrepreneurial AI is pivotal for the reinvention of highly urbanized and regional cities. Application of AI technologies optimizes resource use in an organization thereby increasing efficiency, productivity and economic performance. A study by Fang et al 2023) shows that one of the benefits of AI is that it reduces costs and improves efficiency in organizations' activities in a variety of fields, thus enhancing organizational competition. For example, the application of the predictive maintenance using artificial intelligence in the manufacturing and infrastructure industries is useful in avoiding possible disruptions, at the same time extending the life of critical machines which consequently enhance the economy. Another study by Popescu et al (2024) also found that cities which adopt AI technologies record an increased number of entrant entrepreneurial activities as AI contributes to the development of new forms of industries and market opportunities. Businesses that use AI items to attend urban challenges such as waste collection, transportation, and energy have had a positive impact on the economy since they generate employment and fix capital. They start up the economy and turn cities and regions into centers of innovation and venture.

Furthermore, new e-commerce and other digital services assisted by innovations in artificial intelligence continue to create new forms of market and improve clients' experience in urban economies. According to Lungu (2024), in the realm of retail and logistics, the use of AI platforms has greatly lowered the costs of transactions, expanded market reach and coupled tailored consumption. These developments have led to the growth of the economy within urban areas as pendant buy marijuana online uk firms adopt AI technologies that suit the market. AI is a strategic capital in the context of concept of smart cities, as the application of entrepreneurial AI advances the development of infrastructure, from the perspective of service delivery and the general population's quality of life. AI technologies are widely used in the development of smart city, which aims at controlling the city's infrastructure that includes roads, utilities among others. One good example is in the application of AI in the route planning of public means of transport, as Okem et al (2023) have pointed out. Utilizing the data taken from real-time traffic and passenger data, AI algorithms give more efficient and reliable transport services to the passengers that minimizes traffic jams and keeps up the mobility level in cities.

On the other hand, Balogun et al (2023) also established that AI also facilitated smart city development since it allows continuous monitoring and early identification of problems with infrastructures in cities. Smart systems identify issues with edifice before they lead to major breakdowns thus making cities effective and sustainable. Such changes enhance the well-being of people and lighten the credit obligation on municipal authorities, thus encouraging additional Artificial Intelligence-based innovative start-ups for cities' development. AI also makes it possible to implement renewable energy sources into cities.

Janowicz et al (2020) have pointed out that AI systems control distribution of renewable energy through demand prediction and storage of energy. Innovative business in the renewable energy industry adopts the use of AI to design sustainable and profitable solutions for energy efficiency in smart cities thereby positively impacting the macro economy.

The prospects for promoting an entrepreneurial AI future for urban and regional transformative dynamics are conditioned to the progressive development of AI technologies and fields. It means that the cities will rely much on the AI-based solutions to solve multifaceted problems in the post COVID-19 world including climate change, population growth and scarcity of resources as observed by Zhang and others in 2020. AI will be at the center of the entrepreneurial activities that seek to advance innovation ad spurs on growth of new economy within the urban and regional setting (Ye et al 2021). However, there are still some barriers and most notably in the policy and governance sectors. It is essential to learn how to implement them fairly if societies are to get the most out of AI technologies.

The need for such research arises from the emerging reality of smart cities and the continuously increasing rate of urbanization. Despite these improvements, some issues related to the relationship between entrepreneurial activities and AI assistance in innovation and growth have not received enough attention yet. Contemporary research lacks a comprehensive understanding of the effects of AI on smart city progress and urban infrastructure more broadly. Moreover, the influence of occupational and educational backgrounds on AI adoption in urban and regional planning is under-researched. Addressing these gaps is crucial for shaping sustainable urban environments, fostering economic growth, and advancing technological integration in city planning.

Research questions

1. How do AI-driven entrepreneurial activities impact innovation and economic growth?
2. What are the perceived effects of AI on smart city development and urban infrastructure?
3. What is the influence of occupation and educational background on the AI adoption in urban and regional planning sectors?

Research Hypotheses

1. AI-driven entrepreneurial activities has no significant impact on innovation and economic growth?
2. There is no significant effects of AI on smart city development and urban infrastructure?
3. There is no significant influence of occupation and educational background on the AI adoption in urban and regional planning sectors

Method

The research design employed was a descriptive survey, specifically using an analytic descriptive approach. This was chosen to describe the impact of AI-driven entrepreneurial activities on innovation, smart city development, and urban infrastructure. The design also facilitates comparisons between different strata of the sample based on variables like occupation and educational background. A sample of 124 participants was drawn from technology professionals, entrepreneurs, start-up founders, urban and regional planners, and policy makers.

Data was collected using the Entrepreneurial Artificial Intelligence Scale, which consisted of two sections: Section A requested the demographic details of the respondents and items regarding the use of AI tools by the respondents and Section B assessed the effect of AI based entrepreneurial activities. The questionnaire comprised of items which respondents quantified using a Likert scale with values ranging from 1 to 4. The face validity was confirmed by employing the expert opinions that reviewed the items in terms of content, clarity, usefulness, and comprehensiveness. Only those items that received significant approval were retained for analysis. Reliability was assessed using the Cronbach alpha method, yielding a coefficient of 0.83 after pilot testing with 30 respondents.

Data analysis involved descriptive statistics to summarize demographic characteristics, including frequencies and percentages for age, gender, occupation, and educational background. Mean and standard deviation calculations were performed to assess perceptions of AI's impact. ANOVA was used to test hypotheses, examining differences across demographic factors, with outputs including F-values, p-values, and effect sizes (Partial Eta Squared) to determine significance. The findings were contextualized within existing literature, highlighting the influence of demographic factors on perceptions of AI in urban planning and entrepreneurship.

Results

Table 1: Demographic statistics for Age, Gender, Occupation of Participants, and Educational Background:

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Age				
18-25	53	42.7%	42.7%	42.7%
25-35	38	30.6%	30.6%	73.4%
35-45	20	16.1%	16.1%	89.5%
45-55	13	10.5%	10.5%	100.0%
Total Age	**124**	**100.0%**	**100.0%**	**100.0%**
Gender				
Male	21	16.9%	50.0%	50.0%
Female	21	16.9%	50.0%	100.0%
Total Gender (Valid)	**42**	**33.9%**	**100.0%**	**100.0%**
Missing	82	66.1%		
Total Gender	**124**	**100.0%**		
Occupation of Participants				
Technology Professionals	56	45.2%	45.2%	45.2%
Entrepreneurs and Start-up Founders	45	36.3%	36.3%	81.5%
Urban and Regional Planners	17	13.7%	13.7%	95.2%
Policy Makers and Gov. Officials	6	4.8%	4.8%	100.0%
Total Occupation	**124**	**100.0%**	**100.0%**	**100.0%**
Educational Background				
Undergraduate Degree	41	33.1%	33.1%	33.1%

Master's Degree	51	41.1%	41.1%	74.2%
Doctoral Degree	23	18.5%	18.5%	92.7%
Professional Certification	9	7.3%	7.3%	100.0%
Total Education	**124**	**100.0%**	**100.0%**	**100.0%**

Table 1 shows demographic characteristics of 124 participants regarding age citizenship gender occupation and level of education. By age, there is a young population dominated by the 18-25 years age group (53 students, 42.7 %), 25-35 years (38 students, 30.6%), and 35-45 years (20 students, 16.1%). Gender distribution is equal, female participants are 21 (16.9 %) and male participants are 21(16.9 %). The samples are most commonly represented by technology personnel (56, 45.2%) and business owners (45, 36.3%) in terms of occupation. As far as education is considered, 41 participants have an undergraduate degree (33.1%) and 51 participants have a master's degree (41.1%). Out of the respondents, those with a doctoral degree are 23 (18.5%) while those with professional certification 9 (7.3%).

Research question 1: How do AI-driven entrepreneurial activities impact innovation across different age groups and genders?

Table 2: Mean and SD Analysis for the Impact of AI-Driven Entrepreneurial Activities on Innovation based Age and Gender

Age	Gender	Mean	Std. Deviation	N
25-35	Male	34.7500	5.47930	12
	Female	34.2500	4.24532	12
	Total	34.5000	4.80036	24
35-45	Male	33.2222	4.96935	9
	Female	29.6667	2.25093	6
	Total	31.8000	4.37852	15
45-55	Female	29.6667	1.15470	3
	Total	29.6667	1.15470	3
Total	Male	34.0952	5.19524	21
	Female	32.2857	4.08831	21
	Total	33.1905	4.70722	42

Table 2 above shows the findings to the first research question, which looks at various age and gender groups' entrepreneurial activities in innovations facilitated by artificial intelligence. The perceived impact among the 25-35 age group was higher; the male participants' mean score was 34.75 (SD 5.48) and for female participants it was 34.25 (SD 4.25). Among the 35-45 group, males had lower scores, 33.22 (± 4.97), compared to the females, who scored 29.67 (± 2.25). For the total sample, males scored a mean of 34.10 (SD = 5.20), whereas females scored a mean of 32.29 (SD = 4.09) on the measure, indicating that males regard a larger role of AI in innovation more pervasively.

Research Question 2: What are the perceived effects of AI on smart city development and urban infrastructure based on the age and educational background of the respondents?

Table 3: Mean and SD Analysis for the effects of AI on smart city development and urban infrastructure based on the age and educational background of the respondents

Age	Educational Background	Mean	Std. Deviation	N
18-25	Undergraduate Degree	29.5556	2.65100	9
	Master's Degree	32.7353	5.07106	34
	Doctoral Degree	36.0000	1.41421	2
	Professional Certification	37.0000	.00000	8
	Total	32.9623	4.72702	53
25-35	Undergraduate Degree	32.5000	4.85374	18
	Master's Degree	35.5000	4.50397	8
	Doctoral Degree	38.0909	2.77325	11
	Professional Certification	40.0000	.	1
	Total	34.9474	4.83203	38
35-45	Undergraduate Degree	31.7143	4.44502	14
	Master's Degree	34.0000	4.24264	2
	Doctoral Degree	30.2500	.50000	4
	Total	31.6500	3.93734	20
45-55	Master's Degree	28.5714	3.82349	7
	Doctoral Degree	31.6667	4.08248	6
	Total	30.0000	4.10284	13
Total	Undergraduate Degree	31.5854	4.37593	41
	Master's Degree	32.6471	5.06290	51
	Doctoral Degree	34.8696	4.40356	23
	Professional Certification	37.3333	1.00000	9
	Total	33.0484	4.78795	124

Research Question 2 explores the perceived effects of AI on smart city development and urban infrastructure based on age and educational background and the result is shown in table 3. The 18–25 age group obtained a mean score of 32.74 (SD = 5.07) if they possessed master's degree and 36.00 (SD = 1.41) if they have doctoral degree. For 25-35 age group, the doctorate graduates achieved a mean of 38.09 where, SD = 2.77. Overall, master's degree holders had a mean of 32.65 (SD = 5.06), while professional certification holders averaged 37.33 (SD = 1.00), indicating higher perceived benefits among advanced degree holders.

Research question 3: What is the influence of occupation and educational background on the AI adoption in urban and regional planning sectors?

Table 4: Mean and SD Analysis for the influence of occupation and educational background on the AI adoption in urban and regional planning sectors

Occupation of Participants	Educational Background	Mean	Std. Deviation	N
Technology Professionals	Undergraduate Degree	27.5556	3.28295	9
	Master's Degree	32.3023	4.00318	43
	Doctoral Degree	31.0000	2.58199	4
	Total	31.4464	4.15132	56
Entrepreneurs and Start-up Founders	Undergraduate Degree	32.3889	3.82159	18
	Master's Degree	34.0000	4.79583	7
	Doctoral Degree	37.7273	2.53341	11
	Professional Certification	37.2222	1.09291	9
	Total	34.9111	4.03295	45
Urban and Regional Planners	Undergraduate Degree	32.1250	3.94380	8
	Master's Degree	36.0000	.	1
	Doctoral Degree	32.8750	4.51782	8
	Total	32.7059	4.07377	17
Policy Makers and Government Officials	Undergraduate Degree	33.6667	1.86190	6
	Total	33.6667	1.86190	6
Total	Undergraduate Degree	31.4634	4.01931	41
	Master's Degree	32.6078	4.09916	51
	Doctoral Degree	34.8696	4.30965	23
	Professional Certification	37.2222	1.09291	9
	Total	32.9839	4.27696	124

Research Question 3 examines the influence of occupation and educational background on AI adoption in urban and regional planning and the result is shown in Table 4. For a master's degree holder the mean was 32.30 (SD = 4.00) and for a doctorate degree holder the mean score was 31.00 (SD = 2.58). Those with a doctorate had the highest mean of 37.73 (SD =2.53). Urban planners with master's degrees scored 36.00, though there was only one respondent. Overall, professional certification holders had a mean of 37.22 (SD = 1.09), indicating significant AI adoption among those with advanced qualifications.

Hypothesis 1: AI-driven entrepreneurial activities have no significant impact on innovation across different age groups and genders.

Table 5: Tests of Between-Subjects Effects for the Impact of AI-Driven Entrepreneurial Activities on Innovation by Age and Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	154.421[a]	4	38.605	1.894	.013	.170	7.577	.518
Intercept	27962.179	1	27962.179	1372.04	.000	.974	1372.048	1.000
Age	104.965	2	52.482	2.575	.030	.122	5.150	.482
Gender	37.007	1	37.007	1.816	.186	.047	1.816	.259
Age * Gender	21.007	1	21.007	1.031	.317	.027	1.031	.167
Error	754.056	37	20.380					
Total	47176.000	42						
Corrected Total	908.476	41						

a. R Squared = .70 (Adjusted R Squared = .80)

b. Computed using alpha = .05

The hypothesis tested whether AI-driven entrepreneurial activities significantly impact innovation across different age groups and genders. Based on the result Table 5, the overall model was significant, with a p-value of 0.013, meaning that the every combined variable had a significant influence on innovation. Moreover, gender approached the level of significance (p = 0.186) and interaction between the variables Age and Gender had no significance (p = 0.317). Therefore, Hypothesis 1 is rejected, as AI-driven activities significantly impact innovation, particularly across different age groups.

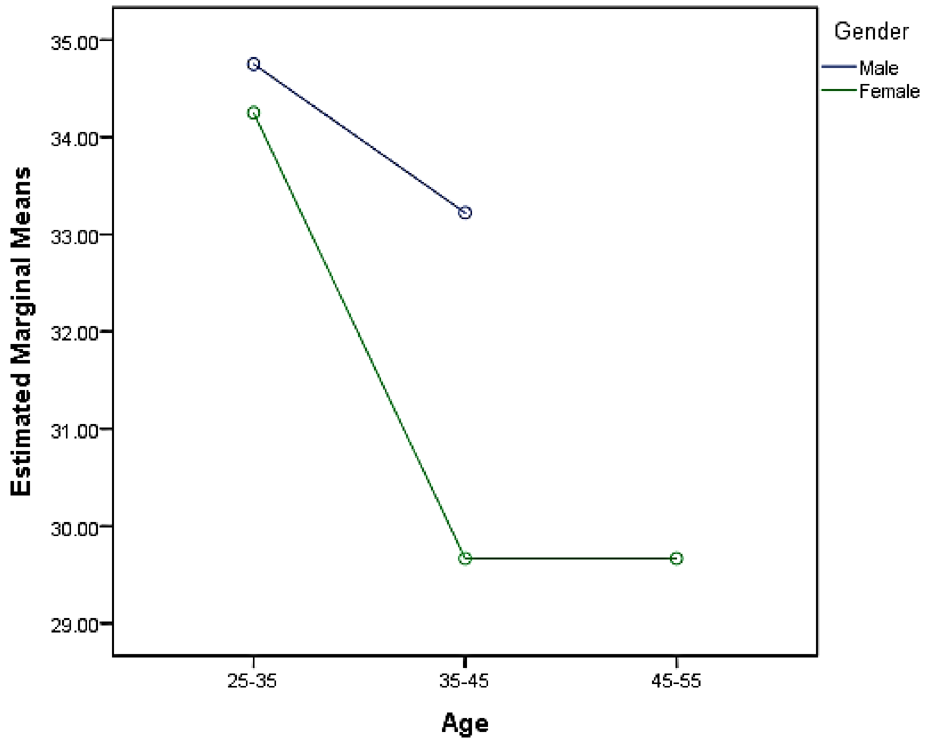

Figure 1: Estimated marginal means of how AI-driven entrepreneurial activities impact innovation

Figure 1 shows the estimated marginal means of the impact of AI-driven entrepreneurial activities on innovation across age groups and gender. Males consistently show higher innovation scores than females across all age groups. The impact on innovation decreases with age for both genders, with the steepest decline for females between ages 25-45.

Hypothesis 2: There is no significant difference in the perceived effects of AI on smart city development and urban infrastructure based on the age and educational background of the respondents.

Table 6: Tests of Between-Subjects effects for the effect **of AI on Smart City Development and Urban Infrastructure by Age and Educational Background**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	846.806[a]	12	70.567	3.970	.000	.300	47.643	.999
Intercept	48186.718	1	48186.718	2711.09	.000	.961	2711.093	1.000
Age	333.734	3	111.245	6.259	.001	.145	18.777	.960
Educational_Background	242.401	3	80.800	4.546	.005	.109	13.638	.875
Age * Educational_Background	130.083	6	21.680	1.220	.302	.062	7.319	.463
Error	1972.904	111	17.774					
Total	138252.000	124						
Corrected Total	2819.710	123						

a. R Squared = .600 (Adjusted R Squared = .525)

b. Computed using alpha = .05

The results from Table 6 reject Hypothesis 2, indicating a significant difference in the perceived effects of AI on smart city development and urban infrastructure based on age ($F = 6.259$, $p = .001$, partial $\eta^2 = .145$) and educational background ($F = 4.546$, $p = .005$, partial $\eta^2 = .109$). The interaction between age and educational background is not significant ($F = 1.220$, $p = .302$). The model explains 52.5% of the variance (Adjusted $R^2 = .525$), with strong observed power (Age = .960, Education = .875).

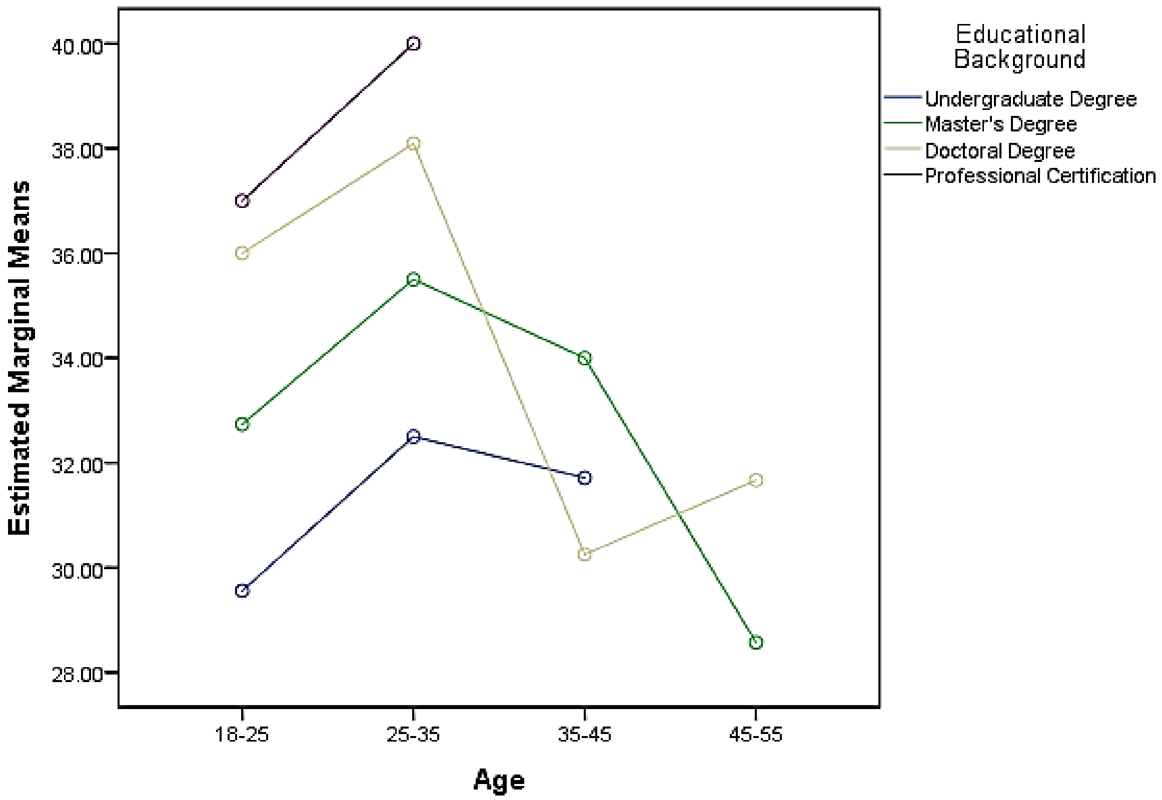

Figure 2: Estimated marginal means of effects of AI on smart city development and urban infrastructure

Figure 2 displays the estimated marginal means of AI's effects on smart city development and urban infrastructure across different age groups and educational backgrounds. Respondents with doctoral degrees (ages 25-35) show the highest perceived impact. Across all age groups, those with professional certifications or higher degrees generally report stronger perceived effects compared to those with undergraduate degrees.

Hypothesis 3: There is no significant influence of occupation and educational background on the AI adoption in urban and regional planning sectors

Table 7: Tests of Between-Subjects Effects for the influence of occupation and educational background on the AI adoption in urban and regional planning sectors

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	741.577[a]	10	74.158	5.555	.000	.330	55.55	1.000
Intercept	48014.743	1	48014.743	3596.9	.000	.970	3596.99	1.000
Occupation_of_Participants	300.751	3	100.250	7.510	.000	.166	22.531	.984
Educational_Background	206.344	3	68.781	5.153	.002	.120	15.458	.916
Occupation_of_Participants * Educational_Background	109.542	4	27.386	2.052	.092	.068	8.206	.597

Error	1508.390	113	13.349					
Total	137154.000	124						
Corrected Total	2249.968	123						

a. R Squared = .330 (Adjusted R Squared = .270)
b. Computed using alpha = .05

The results from Table 7 indicate that Hypothesis 3 is rejected. Occupation (F = 7.510, p = .000) and educational background (F = 5.153, p = .002) significantly influence AI adoption in the urban and regional planning sectors, as the p-values are less than 0.05. However, the interaction between occupation and educational background is not significant (p = .092), meaning their combined influence is not substantial. The model explains 27% of the variance, with an adjusted R-squared of .270, indicating moderate explanatory power.

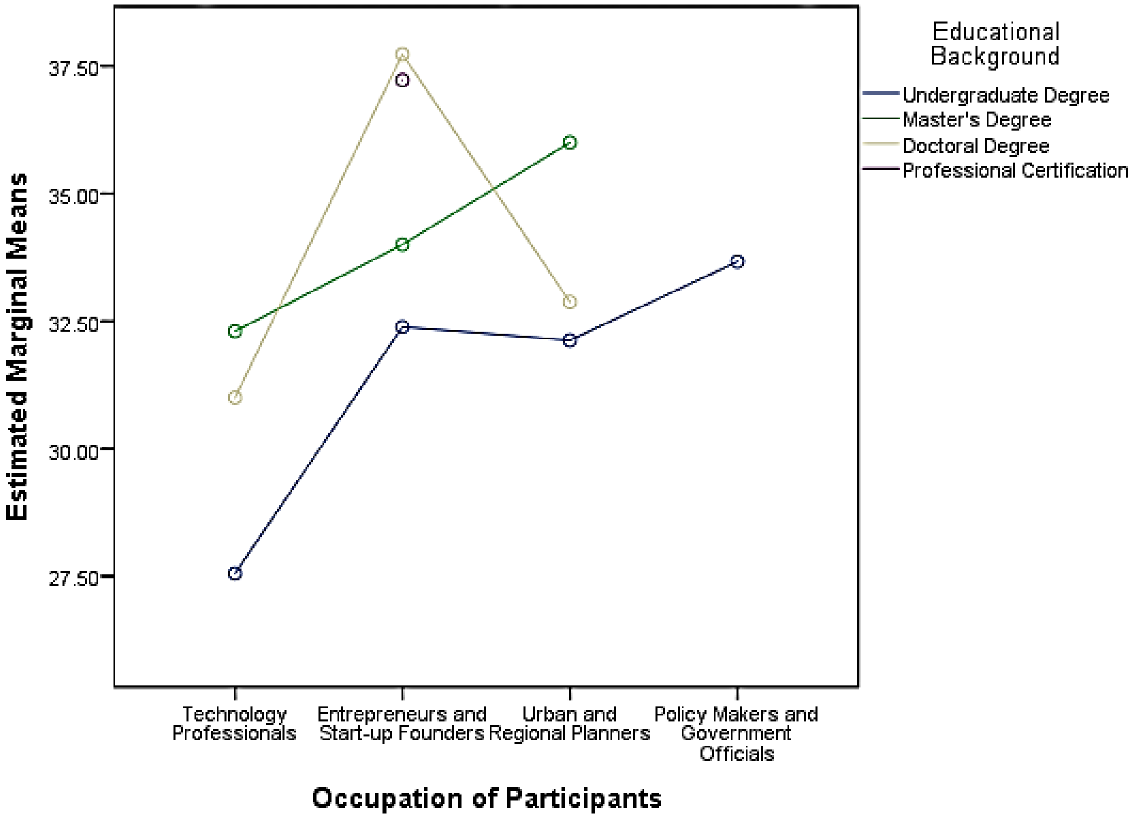

Figure 3: Estimated marginal means of AI adoption in Urban and regional planning sector

Figure 3 illustrates the estimated marginal means of AI adoption across different occupations in the urban and regional planning sector, segmented by educational background. Entrepreneurs and startup founders with professional certifications show the highest AI adoption. Across all occupations, those with doctoral degrees exhibit relatively consistent adoption rates, while technology professionals report the lowest.

Discussion

The current state of AI adoption in urban and regional planning sectors reveals a dynamic integration of AI tools across various areas. AI is increasingly utilized for optimizing traffic management systems in urban environments. This finding agrees with Lungu (2024), who reported that AI algorithms significantly reduce congestion and improve traffic flow. In contrast, Okem et al (2023) emphasize AI's role in improving infrastructure planning, using advanced urban data analytics to support sustainable development goals. In a related study, Balogun et al (2023) highlighted AI's application in enhancing public services and resource allocation, aligning with its increasing incorporation into smart city projects for dynamic urban management. Moreover, AI-driven geographic information systems (GIS) have transformed spatial planning decisions, with Janowicz et al (2020) noting that AI-enhanced GIS enables better environmental and climate adaptation strategies. Regional planners also use AI to forecast economic and demographic changes, and in contrast to traditional methods, AI's predictive capabilities are proving more effective in land use planning. AI-driven simulations assist in designing resilient urban spaces, contributing to cities' ability to adapt to climate change and environmental challenges, as found in Ye et al (2021). Together, these studies reveal the extent to which AI has reshaped contemporary spatial development and metropolitan and regional planning policies.

Entrepreneurial activities run by artificial intelligence are highly influential in the context of innovation and economic development since they promote the introduction of new goods and services on the market effectively. This view is in line with that of Usman et al (2024) who found that entrepreneurs leverage AI to minimize expenditure and enhance overall business efficiency leading to more growth. In contrast, Adeyeri et al. (2024) emphasized the role of AI in market analysis, highlighting how entrepreneurs use AI to identify trends and opportunities, thereby fostering smarter investment decisions and fueling economic expansion. Similarly, Giuggioli and Pellegrini (2023) revealed that AI speeds up the creation of prototypes, as well as the process of growing startups. This is in accordance with the earlier finding that every progress made in AI creates new sources of revenue for businesses leading to economic growth. In the same vain, Echeberria (2022) observed that the integration of AI in success factors facilitates the generation of employment and economic growth for entrepreneurs. In addition, the incorporation of AI in conventional industries breaks down sectors to create new economic activities as noted by Adeyeri (2024) examined how automation through AI reconfigures industries for efficiency and the economy. All these papers show that the entrepreneurial activities enabled by AI are instrumental to the current economic development.

AI significantly influences smart city development, optimizing urban infrastructure for efficiency and sustainability. Smart grids powered by AI enhance energy efficiency by dynamically adjusting power distribution, as noted in Ahmed et al (2023). In contrast, Popescu et al (2024) emphasize that AI-driven sensors used for monitoring air quality ensure healthier urban environments by providing real-time data for interventions. Similarly, AI improves waste management by optimizing collection routes, a finding that aligns with Fang et al (2023) who showed how intelligent systems can reduce operational costs in waste management. In a related study, Zhang et al (2020) found that smart lighting systems controlled by AI reduce energy consumption, contributing to citywide energy conservation efforts. This finding agrees with Shatnawi et al (2020), who reported that AI algorithms can optimize public transportation routes, improving urban mobility. Additionally, AI-driven predictive maintenance extends the lifespan of infrastructure, as highlighted in Olugbade et al (2022) contrasting with older reactive maintenance methods that often lead to costly repairs. Furthermore, AI enhances public safety by enabling advanced surveillance and incident detection, while intelligent systems streamline emergency response, increasing city resilience (Ajayi et al 2021). Occupation and educational background significantly affect AI adoption in urban planning, influencing its implementation across different sectors.

Conclusion

The study on leveraging entrepreneurial artificial intelligence (AI) to enhance urban and regional dynamics demonstrates the transformative potential of AI in driving innovation, economic growth, and smart city development. Findings reveal that AI-driven entrepreneurial activities significantly foster innovation and create new economic opportunities, catalyzing urban modernization. Additionally, the adoption of AI in smart city development enhances infrastructure, making cities more sustainable, efficient, and livable. However, the impact of occupation and educational background on AI adoption highlights the importance of targeted policies and training programs. Ultimately, this study underscores the need for strategic collaboration between policymakers, entrepreneurs, and urban planners to optimize AI's benefits for urban and regional development.

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