talenta PUBLISHER

Entrepreneurship & Creative Industry

Journal homepage: https://talenta.usu.ac.id/jba

The Role of Artificial Intelligence in Enhancing Business Innovation and Creativity in the Cosmetics Industry of Dubai

Khalil Ullah[1], Retno Kusumastuti Hardjono[2*]

[1]*Universitas Indonesia, Depok, 16424, Indonesia*

[2]*Universitas Indonesia, Depok, 16424, Indonesia*

[*]Corresponding Author: r.kusumastuti@ui.ac.id

ARTICLE INFO

Article history:

Received 24 August 2024

Revised 23 November 2024

Accepted 09 January 2025

Available online 31 January 2025

E-ISSN 2963-4377

How to cite:

Ullah, K. Hardjono, K. R. (2025). The Role of Artificial Intelligence in Enhancing Business Innovation and Creativity in The Cosmetics Industry of Dubai. *Journal Business Administration (JBA): Entrepreneurship & Creative Industry*, 4(1), 1-21.

ABSTRACT

The role that artificial intelligence can play in enhancing business innovation and creativity in the cosmetic industry in Dubai is considered. Amongst many key factual problems faced by this industry, there is personalization, supply chain optimization, formulation of products, marketing, and branding—issues that remain ethical and private. The conceptual problems addressed are related to the balance between creativity and automation, data quality, and bias, interdisciplinary collaboration, and change management. It aims to understand how AI-powered solutions can contribute to addressing these challenges and serve as a driver of innovation in the cosmetics sector of Dubai. This paper considers previous related literature about AI applications in multiple business functions and some conceptual framework that links AI to creativity and innovation. In this regard, a mixed-method approach will utilize questionnaires, interviews, and case studies to analyze the interlinkages between AI adoption, AI capabilities, data-driven decision making, and cognitive augmentation as they influence firm innovation and creativity. The research is likely to be of benefit to Dubai Cosmetics Firms with critical insights; at the same time, it will complement existing literature on how emerging technologies can help instill innovation in business activity.

Keyword: Artificial Intelligence (AI), Business Innovation, Cosmetics Industry Creativity, Dubai

ABSTRAK

Peran yang dapat dimainkan oleh kecerdasan buatan dalam meningkatkan inovasi dan kreativitas bisnis dalam industri kosmetik di Dubai telah dipertimbangkan. Di antara banyak masalah faktual utama yang dihadapi oleh industri ini, terdapat personalisasi, optimalisasi rantai pasokan, formulasi produk, pemasaran, dan branding - masalah yang tetap bersifat etis dan pribadi. Masalah konseptual yang dibahas terkait dengan keseimbangan antara kreativitas dan otomatisasi, kualitas data, dan bias, kolaborasi interdisipliner, dan manajemen perubahan. Makalah ini bertujuan untuk memahami bagaimana solusi yang didukung oleh AI dapat berkontribusi dalam mengatasi tantangan-tantangan ini dan berfungsi sebagai pendorong inovasi di sektor kosmetik di Dubai. Makalah ini mempertimbangkan literatur terkait sebelumnya tentang aplikasi AI di berbagai fungsi bisnis dan beberapa kerangka kerja konseptual yang menghubungkan AI dengan kreativitas dan inovasi. Dalam hal ini, pendekatan metode campuran akan menggunakan kuesioner, wawancara, dan studi kasus untuk menganalisis keterkaitan antara adopsi AI, kapabilitas AI, pengambilan keputusan berbasis data, dan peningkatan kognitif karena mereka mempengaruhi inovasi dan kreativitas perusahaan. Penelitian ini kemungkinan besar akan bermanfaat bagi Perusahaan Kosmetik Dubai dengan wawasan kritis; pada saat yang sama, penelitian ini akan melengkapi literatur yang ada tentang bagaimana teknologi yang sedang berkembang dapat membantu menanamkan inovasi dalam aktivitas bisnis.

Kata Kunci: Kecerdasan Buatan (AI), Inovasi Bisnis, Kreativitas Industri Kosmetik.

http://doi.org/ 10.32734/jba.v4i1.17962

1. Introduction

Dubai's cosmetics industry faces challenges in creativity and innovation due to insufficient funding, limited data availability, and cognitive decision-making limitations. To overcome these challenges, businesses need to adopt data-driven strategies and innovative technologies, such as data analytics and artificial intelligence, to enhance decision-making and drive innovation. AI can help create personalized customer experiences, optimize supply chains, formulate new cosmetic formulations, and improve marketing and branding. However, there are moral dilemmas regarding privacy and data collection, and balancing creativity with automation is crucial (UAE Cosmetic Products Market Insights, 2024).

Data quality and bias are also important considerations, as AI is trained on data. Interdisciplinary collaboration between subject matter expertise, marketing, and technology is necessary for successful AI implementation. Change management is also necessary for organizations to transition from traditional methods to information-based management.

This study focuses on the cosmetics industry in Dubai, examining how AI can benefit creativity and innovation in the industry, considering changes in customer preferences and market dynamics. It also explores how AI technologies, recommendation engines, augmented reality, and natural language processing are advancing user experience and personalization in the industry. Future trends and applications of AI in the cosmetics industry, such as conversational and generative AI, could provide valuable insights into the future growth of the Dubai cosmetics industry.

Artificial intelligence (AI) is increasingly important in various industries due to its numerous benefits. It enhances business efficiency and optimization by processing large amounts of data, automating processes, and providing projections of future events. AI has also improved customer experience by offering 24/7 customer support and faster response rates. AI also supports strategic initiatives by predicting or classifying data for better business decisions.

Artificial intelligence for IT operations (AIOps) combines natural language processing with AI and machine learning to improve IT operations and service management. AI tools help marketing teams design targeted marketing campaigns, increasing productivity and customer relationships. Cybersecurity and fraud management are another area where AI is utilized, identifying fraudulent behavior to prevent losses.

AI's game-changing prowess in business functions includes content creation, chatGPT, and other AI technologies used in producing website content in foreign languages. Research models show that AI systems must accurately understand and adjust to customer preferences. AI in the skincare cosmetic sector has been studied, highlighting potential biases within modern ML technologies.

Artificial intelligence is also being applied in the beauty and cosmetics industries, such as natural language processing, augmented reality, virtual mirrors, and recommendation engines. AI can not only boost creativity and innovation but also promote ethical and moral considerations in the industry.

Indonesian context is crucial in understanding how AI can drive corporate creativity and innovation in the Indonesian cosmetics industry. Future studies should focus on the Indonesian context and include information from sources found in Indonesia to ensure a thorough understanding of how AI can support creativity and innovation in the industry (*STATEMENT: Indonesia Submits New 2030 Climate Targets and First Long-Term Climate Strategy*, 2023).

This paper explores the potential of artificial intelligence (AI) in driving business innovation and creativity in the Dubai cosmetics industry. It aims to understand how AI can handle various challenges faced by cosmetic companies in Dubai and how AI can help them maintain their competitive edge. The research questions include the effect of AI use on creativity and innovation in the Dubai cosmetics industry, and the hypothesis development that AI adoption positively influences creativity in businesses (Janssens et al., 2021).

The hypothesis states that higher AI adoption levels will lead to a rise in the quantity, originality, and uniqueness of new ideas, as well as higher AI capabilities. This will also lead to increased revenue from new inventions, more new products and services, and a shorter time to market for innovative solutions.

AI capabilities will also positively influence business innovation, as businesses will launch more new goods and services, increase revenue from inventions, and shorten the time it takes for new products to reach the market. Creativity mediates the relationship between AI adoption and business innovation, and human-AI collaboration moderates the relationship between AI skills and creativity (What Is AIOps?, 2023).

The research aims to analyze the impact of artificial intelligence (AI) on creativity and innovation in Dubai's cosmetics industry. It will focus on the specific context of Dubai, its growing environmental consciousness, and the potential of AI to transform the industry. The study will expand our understanding of AI's potential impact on various businesses by examining its consequences.

The practical implications of the project include equipping cosmetics companies with knowledge to make informed decisions about using AI in their innovation processes. By explaining the consequences of AI on corporate innovation and creativity to legislators and industry professionals, the research hopes to influence business practices and laws related to AI use.

The study will contribute to the literature by understanding the potential impact of human-AI cooperation on many enterprises beyond the cosmetics industry. A methodical approach will be used to address the research questions and objectives, based on AI capabilities, data-driven decision-making, cognitive enhancement, ethical considerations, and human-AI interaction.

AI is being used in the cosmetics industry to improve customer experiences, streamline processes, and personalize goods and services. It is at the forefront of innovation, offering an endless possibility for developing customized and unique beauty solutions. AI can be used by cosmetics companies to evaluate massive amounts of data to understand consumer trends and preferences, ultimately changing how products are made and marketed (Habib et al., 2024).

Dubai's culture encourages innovation and teamwork, providing businesses with a unique opportunity to test and perfect AI-driven beauty products in a vibrant market. The combination of pigments and pixels is transforming the market and providing a wide range of options for customized cosmetic items (Soori et al., 2023).

A survey by Jobstreet Indonesia (2022) involving 17,632 Indonesian respondents revealed that 73% of employees are dissatisfied with their jobs. This dissatisfaction can lead to decreased motivation and productivity, ultimately hindering the company's goals (Arianty, Bahagia, Lubis & Siswandi, 2016). Job dissatisfaction and routine work can cause stress, which varies among individuals. To cope with work stress, employees may engage in cyberloafing—using the internet for personal purposes during work hours.

Blanchard and Henle (2009: 1068-1069) explain that cyberloafing is often triggered by work stress, role ambiguity, and role conflict. Employee empowerment can play a crucial role in mitigating these issues. Supportive and attentive management that acknowledges good performance, listens to employee feedback, and fosters a positive work environment can enhance job satisfaction.

The significance of digital technology in businesses is undeniable, yet it poses challenges in monitoring employee activities. The palm oil industry, a key sector in Indonesia's economic development, illustrates this challenge. As the world's largest palm oil producer (Siaran Pers, 2021), it is difficult for companies employing plantation workers to supervise every activity directly.

Interviews with employees of PT Inti Indosawit Subur (IIS) revealed instances of cyberloafing, prompted by routine work and limited interaction with supervisors, which could impact job satisfaction.

Asian Agri, a prominent Indonesian private company producing crude palm oil sustainably, manages its operations through PT Inti Indosawit Subur (IIS). As a member of the Roundtable on Sustainable Palm Oil (RSPO), Asian Agri adheres to sustainable practices, emphasizing accountability and environmental stewardship.

This study investigates the impact of cyberloafing and employee empowerment on job satisfaction among plantation company employees. Previous research shows varying results regarding the effects of cyberloafing on job satisfaction. This study also aims to analyze the influence of employee empowerment on job satisfaction.

2. Theoretical Studies

This review focuses on the scrape of AI in business model innovation under perspectives of sustainable development. The core of the study relies on previous research articles, which argue for a clear perspective of business structures to support innovation in developing sustainable business models (Haan, 2023).. The research also highlights the implications of digitalization for business model innovation, the importance of aligning various open innovation strategies with certain facets of business models, and the potential use of AI from the perspective of sustainable business models (Oltmann, 2016).

This has therefore been included in the review on studies that reflect innovation and entrepreneurship, with the AI capacity for co-evolutionary processes and feedback loops leading to the development of new venture feasibility via business models. The review of studies that assess social factors that come in between the creativity and entrepreneurship of cities in the USA (Vaio et al., 2020).

The permeation of AI capabilities has transformed the nature of innovation and entrepreneurship, opening up new opportunities but also introducing new challenges. For example, the research indicates the possibility that AI skills can enhance product innovation performance in extremely competitive settings. (Teece, 2010).

One must understand the processes of indigenous entrepreneurship in India and how it impacts innovation. Thus, there should be more research conducted on how AI fosters open innovation and cross-sectoral cooperation. In general, the review needs to be further investigated with the scope through which AI can foster innovation and entrepreneurship in different sectors and businesses (Evans et al , 2017).

Diversity and innovation on female boards are positively related to business performance in other sectors similarly based on innovations. Female board participation has a positive relationship with corporate innovation and business success thus proving diversity as a key player in leadership. The ludic drive is similarly highly interrelated with gamification, AI, and creativity. The fusion of AI and gamification makes for an exciting point of convergence for creative development since new solutions can be created by marrying the analytical and cognitive abilities of AI with a natural motivation for play and game-like experiences by (Rachinger et al., 2019).

AI gains huge importance in the promotion of company innovation and change initiatives. Research indicates that firms are using AI more to optimize processes, increase automation, interact with people, and learn and/or disrupt the ecosystem, thereby enhancing increased business value of their transformed projects. However, there are still important knowledge gaps; thus, many areas require more research. More empirical research is needed to study the impacts of AI on various aspects concerning the innovation of companies, such as customer interfacing, product creation, and the type of Marketing strategies used (Evans et al , 2017).

Also, research should provide in-depth research on possible challenges and limitations that may arise from the use of AI technologies in corporate innovation, such as ethical concerns, data privacy matters, and the nature of interactions with AI as being used to drive business innovation with the cutting edge as it evolves further. Endless possibilities will likely need to be researched in terms of just how AI is being used to drive business innovation at the cutting edge while it continues to evolve in these coming years (Saebi & Foss, 2015).

Real-world implementations of AI are also important because AI technologies can create a competitive advantage and help to solve real business problems. This review enhances our conceptualization of how AI will shape the future of business by applying knowledge gaps and ways to investigate new uses of AI in business innovation (Nosratabadi et al., 2019).

The paper presents an analysis on AI technologies and their potential application in business but, first and foremost, their implications for creativity and innovation at work. The paper identifies the patterns of AI adoption nowadays and gives some early insights on future advancements in this field. From a business perspective, the analysis also reveals future changes in working patterns and employees' composition that will be brought about by AI technologies – vital information for businesses for optimizing their AI technologies in the most appropriate way Valkokari (2016).

The potential that artificial intelligence (AI) technologies have to change the face of nearly all sectors has been given much attention only in the current year. This paper investigates how AI affects and relates to corporate creativity and innovation, drawing on knowledge from other disciplines. Previous research on AI with respect to business functionalities spoke of automation, decision-making, and better consumer experiences. However, this study is particularly interested in how AI can support corporate innovation and creativity, drawing on knowledge from other disciplines (Chen & Bellavitis, 2019).

Future work should, therefore, try to understand many aspects surrounding the boomerang relationship among AI, creativity, and diversity in leadership, as well as AI's potential role in business model innovation to drive innovation and foster entrepreneurship. The theoretical underpinning of the current research is on numerous ideas and theories of organizational behavior, innovation management, and AI (Richter, 2013).

Artificial intelligence: computer systems developed with AI predictive analytics, computer vision, natural language processing, machine learning etc. Creativity and Innovation are core in an organization towards the expansion and towards maintaining competitiveness. Hence future research should be capable of filling in the knowledge gaps and providing possible ways towards investigating how AI can foster creativity and innovation in different industries (Kiel et al., 2017).

The paper at hand centers on the implications of increased AI capabilities in businesses focusing on creativity and innovation. Specifically, the research aims to ascertain the hypothesis that AI adoption predicts an increase in creativity and elaborates on the mediating and moderating roles that respective creativity and human-AI collaboration play in these relationships. Information will be collected that concerns the adoption of AI, creative indicators, and metrics for originality and novelty of ideas (Sjödin et al., 2021).

It will also consider the relationship that exists between AI capabilities and business innovation such that the proposed hypothesis shall always be upheld if the coefficient for AI adoption is positive and of statistical significance.

It will instead carry out the relationship of the capability of AI and business innovation. In the data collected, there will be the inclusion of AI skill data, creativity markers, and metrics for concept novelty and uniqueness (Wamba-Taguimdje et al., 2020). Mediation analysis will be carried out with regards to testing of the hypothesis, where the dependent variable will be creativity and the independent variable process, AI (George et al., 2012).

The study shall also perform a test moderation analysis on the hypothesis. The results will be subsequently analyzed using regression analysis, with AI being an independent variable, creativity as a dependent variable, and human-AI collaboration as a moderator, (Füller et al., 2022).

To make the concepts of the research model operational, some specific measures and indicators need to be identified, such as adoption of AI, AI capabilities, data-driven decision-making, and cognitive augmentation, besides the control variables: industrial sector, business size, and organizational culture.

The Pearson correlation coefficient will be applied to test the correlation between variables. All coefficients lie between 0 and 1, with -1 denoting a perfect negative correlation and 1 a perfect positive correlation. The current study is expected to provide essential contributions to the possible advantages of AI in promoting creativity and innovation in an organization (Chen et al., 2015).

3. Method

Hence, the current study is grounded on the premise of examining the impetus of AI on innovations and creativity in the Dubai cosmetics sector. The data will be collected from a sample through a mix of methodologies that include individuals from the cosmetics field who are based in Dubai, such as managers, executives, and workers (Hassan, 2023). The researcher shall then analyze the data through descriptive statistics, correlation and regression analysis, and other such quantitative methods that shall aid in the examination of the relationship between certain variables to test their research hypotheses.

The paper will therefore research the probable benefits and challenges that AI implementation may bring to the cosmetics industry within Dubai, centering on driving creativity and innovativeness in product development and marketing strategies. Furthermore, recommendations will be made on how AI can be leveraged effectively in this implementation.

The study population is people working in the cosmetics business in Dubai, making it the first of its kind to investigate how the various backgrounds may influence the adoption of AI technologies for this population. Previous stints at Unilever and P&G have further contributed to understanding the industry and, hence, assist in the data collection process. The kind of relationship that a researcher has with the industry parties involved is likely to help in providing new insights, and hence, key stakeholders may be more easily available for further data collection and analysis.

In this regard, the sample that has been obtained for the study includes the key cosmetic firms in Dubai like Huda Beauty LLC, The Estée Lauder Companies, Unilever Plc, Shiseido Company, Ltd., and Anastasia Beverly Hills, LLC. In addition, the prior conducting of interviews with several key personnel shed light on how AI enhances innovation and creativity in this industry. The following avenues have been examined: surveys, analysis of data, industry papers, case studies, and other related publications.

The research proposal indicates that the study will draw 108 individuals working in the cosmetics industry in Dubai. The population for this study is people employed in the cosmetics business in Dubai. This population was chosen for the simple reason that Dubai is a very competitive and dynamic business environment, and as a result, it would make an ideal location for testing how artificial intelligence is affecting creativity and innovation in makeup studios.

This study combines both purposive and convenient sampling techniques in selecting participants for the research. For the case of purposive sampling, it focusses on identifying individuals who are working within the cosmetic industry in Dubai and who have invested in AI. Researchers identified those managers, executives, and workers who are involved in innovations and creative processes within these companies. Such a methodology will draw valuable insights on the influence of AI on the future Dubai cosmetic market and provide practical recommendations for firms that would like to adopt AI technologies.

Here, convenience sampling focuses on those people who are easily accessible and available in order to provide an in-depth and diversified look at the topic. The criteria for inclusion will be well set by the researcher to ensure that the sample includes the people relevant to the goals of the study to render insightful opinions on the subject.

Data analysis involves using analytical techniques to test the given hypotheses, derive findings, and investigate the relationship between variables. Thematic analysis ought to be applied in the identification of patterns, themes, and codes. Additionally, business case studies on how effectively AI has been used for instilling creativity and innovation can also be performed to identify the tactics, methods, and impacts that go

along with the use of AI. The ethical analysis conducted under the most popular ethical frameworks and standards to expose possible conundrums and suggest methods of making AI ethical and responsible. Comparative analysis will evaluate the practices, outcomes, and challenges faced by companies of different sizes or from different industries.

The study is aimed at establishing if and how the use of AI in the cosmetic sector in Dubai has any impact on the innovation and creativity of firms. The reliability of the constructs will be tested through measures such as Cronbach's alpha, test-retest reliability, content validity, construct validity, and criteria validity.

The study population will therefore be drawn from top-rated firms like Huda Beauty LLC, The Estée Lauder Companies, Unilever Plc, Shiseido Company, Ltd., and Anastasia Beverly Hills, LLC. Data triangulation techniques will make use of the credo of interviews, surveys, and secondary data, in order to enhance the validity and credibility of the findings.

The research will be heading towards the adoption of AI, AI capabilities, data-driven decision making, cognitive augmentation, company innovation, creativity, and control variables, which would include industrial sector, business size, and the organizational culture. The independent variables from the research would comprise the adoption of AI and AI Capabilities, while the dependent variables shall be the increase in firm innovation, creativity, and control factors.

The study for this research comprises the independent variables such as AI adoption, AI capabilities, firm innovation, and control factors like an industrial sector, business size, and organizational culture. The grading system will apply to gauge the adoption and capability of AI within the study, and controlling will be made in the industrial sector, business size, and organizational culture to handle, to maintain a tap over AI adoption and potential for innovation in a firm. In other words, the research is intended to give proper advice, techniques, best practices, and guidelines to businesses on how to use AI properly in bringing creativity and innovation into practice.

4. Result and Discussion

I. Hypotheses Testing

H1: AI adoption positively influences creativity in businesses

Testing the Hypothesis: To do so, I will operate with the concept of multiple regression analysis, where "Impact_on_creativity" will be the dependent variable and variables regarding AI adoption, for example, "AI_in_business" and "AI_utilization", will act as independent variables.

Table 1. regression coefficients and their statistically significant effect of AI adoption on creativity

Model Summary

Model	R	R *Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.258[a]	.067	.049	.563

a. Predictors: (Constant), AI_in_business, AI_utilization

The model's R-squared value of 0.067 indicates that independent variables explain 6.7% of the variation in the dependent variable. At 0.049, the adjusted R-squared measure points to a minimal model fit change, with standard error equating to 0.563

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.379	2	1.189	3.753	.027[b]
	Residual	33.279	105			
	Total	35.657	107			

a. Dependent Variable: Impact On Creativity

b. Predictors: (Constant), AI in business, AI Utilization

The ANOVA table shows the statistical significance of the model, where the F-statistic is 3.753 with a p-value of 0.027. From the table parameters, this leads to the consideration that there is a significant linear relationship between the independent variables and the dependent variable.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.701	.368		12.760	<.001
	AI_utilization	-.184	.067	-.263	-2.738	.007
	AI_in_business	.055	.094	.057	.590	.556

a. Dependent Variable: Impact_on_creativity

The regression model indicates that, while AI utilization has a negative impact on creativity, AI in business does not have a significant effect. The R-squared value for the model is 0.067, which means that it explains 6.7% of the variation in the dependent variable. According to the ANOVA table, the model is significant with a p-value of 0.027. However, from the coaxial for AI utilization variables on column "Impact on creativity," it is 0.055, meaning that the main reasons for its effect on creativity are not covered.

H2: AI capabilities positively affect creativity in businesses

This would also be tested through multiple regression analyses, with "Impact on creativity" as the dependent variable and independent variables representing the capabilities of AI in enhancing creativity, such as "AI enhance innovation" and "AI contribute creativity".

Table 2. AI capability indicators have a positive and significant relationship with creativity

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.777[a]	.604	.600	.365

a. Predictors: (Constant), AI contribute creativity
b. Dependent Variable: Impact on creativity

The model presents an R-squared value of 0.604, thereby depicting that AI explains 60.4 percent of the variation in the dependent variable, while the adjusted R-squared value comes to be 0.600 with a standard error of 0.365.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.539	1	21.539	161.712	<.001[b]
	Residual	14.119	106	.133		
	Total	35.657	107			

a. Dependent Variable: Impact on creativity
b. Predictors: (Constant), AI contribute creativity

The ANOVA table returns that there is a strong, significant relationship between the independent variable "AI_contribute_creativity" and the dependent variable "Impact on creativity", with 1 degree of freedom in the numerator and 106 degrees in the denominator.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.675	.289		2.334	.021
	AI_contribute_creativity	.839	.066	.777	12.717	<.001

a. Dependent Variable: Impact on creativity

The results return a highly significant correlation of increasing AI_contribute_creativity with an increase in the "Impact_on_creativity" variable, wherein the statistical significance of unstandardized and standardized coefficients is at $p<0.001$.

Journal Business Administration (JBA) Vol. 04, No.01 (2025) 1-21

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.19	4.87	4.32	.449	108
Residual	-2.868	.971	.000	.363	108
Std. Predicted Value	-2.527	1.211	.000	1.000	108
Std. Residual	-7.857	2.661	.000	.995	108

a. Dependent Variable: Impact_on_creativity

The research finds that AI causes 60% of the total variance, an F-statistic of 161.712 that is statistically significant and indicates an increase of 0.839 in creativity impact.

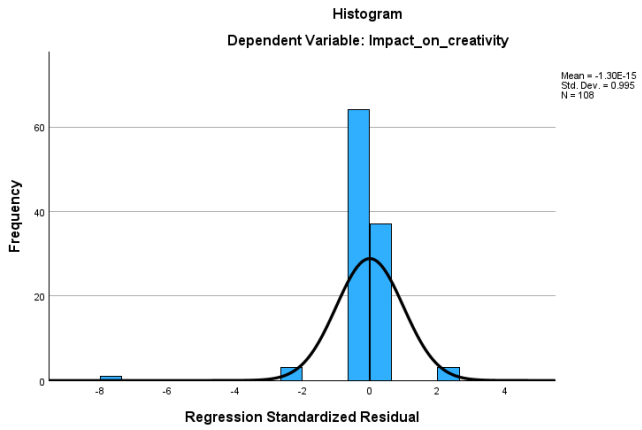

Figure 1. the independent variable, 'AI contribute creativity', may affect the dependent variable 'Impact on creativity'

The histogram will depict a normal distribution since it's in the shape of a perfect bell-shaped curve. This is important for one of the assumptions for regression analysis: that the residuals are normally distributed.This mean value is near zero, indicating desirability since it means that the model is, on average, correctly predicting the dependent variable.

It informs about the spread, or variability, of the residuals around the mean. The standard deviation is about 0.995. There are some outliers at the tail-ends of the distribution, with some residuals quite outside the normal range. These outliers perhaps should be looked at to see if they are peculiar points of data that may have some bearing on the model

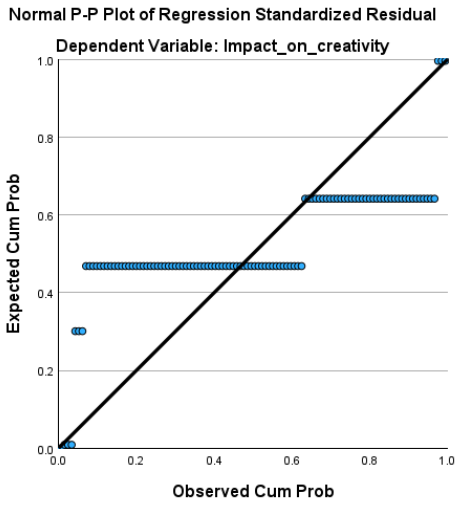

Figure 2. Normal P-P Plot Impact of Creativity

The points lie very close to the diagonal reference line, showing that residuals are actually very close to the normal distribution. This verifies that the assumption of normality for the regression analysis is met. There are no major deviations or outliers from the diagonal line, further supporting the conclusion that residuals are normally distributed. This can be seen through the linear trend of the plotted points, indicating a strong linear

relationship between the observed cumulative probabilities and the expected cumulative probabilities under the normal distribution.

H3: AI adoption positively impacts business innovation.

Testing this, I will implement multiple regression analysis where the dependent variable will be the "Impact on innovation" column while independent variables are those on AI adoption. I will check the regression coefficients to determine if AI adoption has a positive effect on business innovation.

Table 1. AI Adoption Has A Positive Effect On Business Innovation

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.667	.661	.464

a. Predictors: (Constant), AI in business, AI utilization
b. Dependent Variable: Impact on innovation

The model explains a strong predictive relationship of its R-squared value of 0.667, which is associated with an interpretation that states the "AI in business" and "AI utilization" variables explain 66.7% of variation in the dependent variables.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	45.277	2	22.638	105.294	<.001[b]
	Residual	22.575	105	.215		
	Total	67.852	107			

a. Dependent Variable: Impact_on_innovation
b. Predictors: (Constant), AI_in_business, AI_utilization

The significance values in the ANOVA table prove a highly significant regression model, indicating that there is a quite strong and significant relationship between the independent variables "AI_in_business" and "AI_utilization" on the dependent variable "Impact_on_innovation.".

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.486	.303		4.898	<.001
	AI_utilization	.785	.055	.813	14.198	<.001
	AI_in_business	.024	.077	.018	.316	.753

a. Dependent Variable: Impact_on_innovation

Result show there is a significantly positive relationship between AI usage and innovation impact: a 0.785-unit increase in AI usage with a 0.813 standard deviation increase in innovative impact; there is, however, no such relationship in relation in AI usage in business.

Residuals Statistics[a]

Minimum		Maximum	Mean	Std. Deviation	N
Predicted Value	3.13	5.48	4.04	.650	108
Residual	-1.746	1.063	.000	.459	108
Std. Predicted Value	-1.397	2.221	.000	1.000	108
Std. Residual	-3.766	2.292	.000	.991	108

a. Dependent Variable: Impact_on_innovation

It predicts values, residuals, standardized values, and residuals with different degrees of accuracy, with a mean of 4.04, a standard deviation of 0.650, and a maximum of 5.48. This paper assesses the impact of AI in business on innovation and finds out that 67 per cent of variance is due to the utilization of AI. Based on this regression equation, when AI utilization goes up by one unit, then its impact on innovation will go up by 0.785; however, no significant relationship was found.

Journal Business Administration (JBA) Vol. 04, No.01 (2025) 1-21

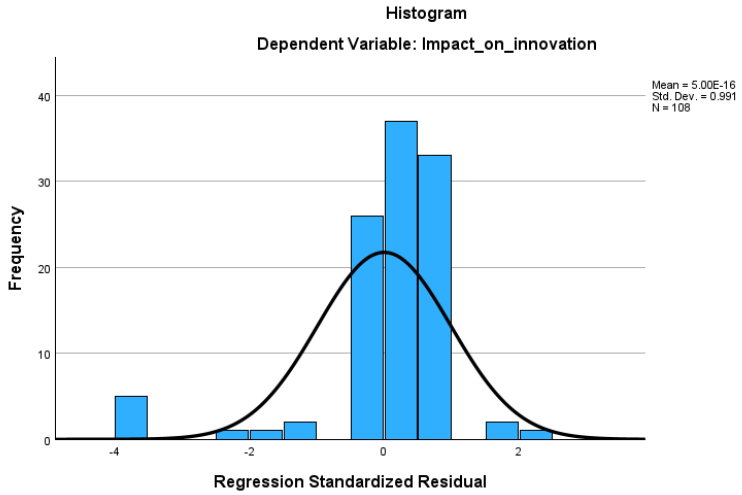

Figure 3. dependent variable 'Impact_on_innovation' are attributed to two independent variables: 'AI_in_business' and 'AI_utilization'

The histogram is bell-shaped, showing that the residuals are normally distributed. This is important for the validity of the regression model.It is desirable that the mean value of the residuals be close to zero, for this would indicate that the model generally is predicting the dependent variable correctly. It tells about the spread or variability of the residuals around the mean; here, the standard deviation of the residuals comes to be about 0.991. There are some clear outliers in the tails of the distribution. Some of the residuals clearly fall outside the normal range. Those outliers might be interesting to explore unusual data points that could influence the model.

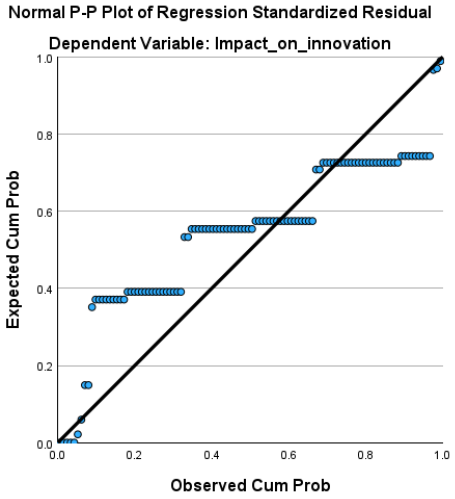

Figure 4 dependent variable 'Impact_on_innovation' are attributed to two independent variables: 'AI_in_business' and 'AI utilization' Normal P-P

This plot indicates that the points very closely follow the diagonal reference line, showing how well the residuals are normally distributed. This suggests extremely robust evidence that the test of normality presupposition is met.There are no large deviations or outliers from the diagonal to suggest otherwise; therefore, it further confirms the fit of residuals to a normal distribution.

The plotted points form a straight line, indicating a strong linear relationship between the observed cumulative probabilities and the expected cumulative probabilities under the normal distribution.

In general, this Normal P-P Plot shows that the residuals resulting from the regression model are normally distributed. This assumption is important to be verified so that statistical inferences drawn from the analysis can be considered reliable and valid.

The fact that the points lie very very close to the diagonal line instills a high level of confidence in the appropriateness and strength of the regression model. This puts more credence in the insights and conclusions derived from the analyzed.

Journal Business Administration (JBA) Vol. 04, No.01 (2025) 1-21

H4: AI capabilities positively influence business innovation

In this hypothesis, I will apply multiple regression, where the "Impact on innovation" column will be the dependent variable, while the AI capability variables will be the independent variables. I will establish whether the indicators of AI capability are positively and significantly related to business innovation.

Table 2. AI capability are positively and significantly related to business innovation

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.079[a]	.006	-.003	.798

a. Predictors: (Constant), AI_contribute_creativity
b. Dependent Variable: Impact_on_innovation

The Model R-Squared of 0,006 indicates that independent variable "AI contribute creativity" only explains 6% of dependent variable variation, with an Adjusted R-Squared of -0.003 and a std. error of 0.798 units.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.421	1	.421	.662	.418[b]
	Residual	67.430	106	.636		
	Total	67.852	107			

a. Dependent Variable: Impact_on_innovation
b. Predictors: (Constant), AI_contribute_creativity

The ANOVA table shows that, in general, the regression model is not significant: F-statistic = 0.662; p-value = 0.418. This means that according to this model, the independent variable "AI_contribute_creativity" does not have any statistically significant relationship with the dependent variable "Impact_on_innovation". Model 1 has 1 degree of freedom in the numerator and 106 in the denominator.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.527	.632		5.581	<.001
	AI_contribute_creativity	.117	.144	.079	.814	.418

a. Dependent Variable: Impact_on_innovation

The coefficient for AI_contribute_creativity is 0.117, so one more unit of "AI_contribute_creativity" is associated with a 0.117 unit increase in the factor "Impact_on_innovation," all other things held constant. Meanwhile, the standardized regression coefficient, Beta, for "AI_contribute_creativity" equaled only 0.079, while the p-value of 0.418 means that this relationship is not statistically significant. The value of the intercept, or the constant term, is 3.527 and may be interpreted as the predicted value of "Impact_on_innovation" when AI_contribute_creativity is zero.

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.88	4.11	4.04	.063	108
Residual	-1.113	1.004	.000	.794	108
Std. Predicted Value	-2.527	1.211	.000	1.000	108
Std. Residual	-1.396	1.259	.000	.995	108

a. Dependent Variable: Impact_on_innovation

It will, therefore, look at the independent variable 'AI_contribute_creativity' influencing the dependent .Although nonzero, the R-square value of 0.006 is very low and thus seems to tell that the value accounted in explaining variance within the impact of AI's contribution to creativity on innovation is very small.The F-statistic here is 0.662 with a p-value of 0.418, so this regression model is not statistically significant.According to the analysis of the regression coefficients, if AI increases its contribution to creativity by 1 unit, then its impact on innovation will correspondingly increase by 0.117; however, this relation is not statistically significant.

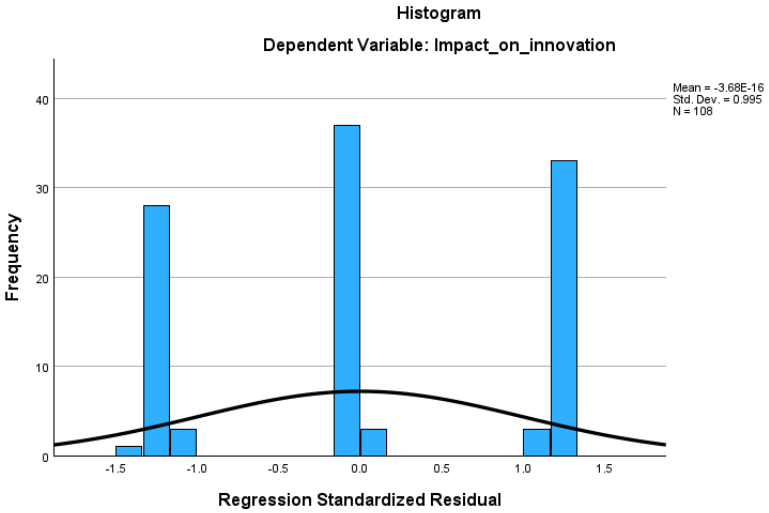

Figure 5. 'AI_contribute_creativity' influencing the dependent variable 'Impact on innovation'

The histogram is bell-shaped, so the residuals are normally distributed. This is important for the validity of the regression model. The mean value of the residuals is very near to 0 at about -3.68E-16, thus indicating that the model is predicting the dependent variable accurately. The standard error of the residuals 0.995 gives the idea of the spread or variability of the residuals around the mean.There are some clear outliers at the tail-ends of the distribution, plus some residuals quite far from the normal range. Such outliers might need more investigation to see if they are unusual data points that will bias the model

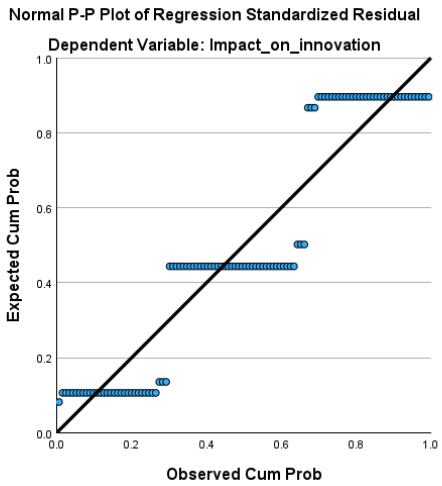

Figure 6. 'AI contribute creativity' influencing the dependent variable 'Impact on innovation'. Normal P-P plot

The plotted points of the residuals run very close to the diagonal reference line, which indicates that they are normally distributed to a remarkably good degree. This will give very strong evidence that the normality assumption is met.No extreme deviations or outliers from the diagonal line are present, which generally provides excellent confirmation of a good fit to a normal distribution of the residuals. This suggests, through a linear trend in the plotted points, that there may be some kind of robust linear relationship between the observed cumulative probabilities and expected cumulative probabilities under the normal distribution. The

following is a Normal P-P plot of residuals from a regression model, hence showing that the residuals are normally distributed. This assumption is very critical to the reliability and validity of the statistical inference.

The closer the points are to the diagonal line; the more confidence is infused into the appropriateness and strength of the regression model. This increases the credibility of the insights and conclusions derived from the analysis.

H5: Creativity mediates the relationship between AI adoption and business innovation.

In order to test this mediation hypothesis, I will use the test of mediation analysis, either the Sobel or the Preacher and Hayes method, to assess the indirect effect of AI adoption on business innovation through the mediation of creativity.

Table 3. Effect Of AI Adoption On Business Innovation Through The Mediation Of Creativity

Descriptive Statistics

	Mean	Std. Deviation	N
Impact_on_innovation	4.04	.796	108
AI_enhance_innovation	4.35	.535	108
AI_contribute_creativity	4.35	.535	108
AI_utilization	3.14	.826	108

In the variables, "Impact_on_innovation" is the dependent variable with a mean of 4.04, and a standard deviation of 0.796. Independent variables include "AI_enhance_innovation" with a mean of 4.35 and a standard deviation of 0.535, "AI_contribute_creativity" has a mean evaluation of 4.35, with a standard deviation of 0.535. The other independent variable is "AI_utilization" with a mean evaluation of 3.14 and a standard deviation of 0.826.

Correlations

		Impact on innovation	AI enhance innovation	AI contribute creativity	AI utilization
Pearson Correlation	Impact On innovation	1.000	.079	.079	.817
	AI enhance innovation	.079	1.000	1.000	-.091
	AI contribute creativity	.079	1.000	1.000	-.091
	AI utilization	.817	-.091	-.091	1.000
Sig. (1-tailed)	Impact on innovation	.	.209	.209	<.001
	AI enhance innovation	.209	.	.000	.176
	AI contribute creativity	.209	.000	.	.176
	AI utilization	.000	.176	.176	.
N	Impact on innovation	108	108	108	108
	AI enhance innovation	108	108	108	108
	AI contribute creativity	108	108	108	108
	AI utilization	108	108	108	108

The dependent variable "Impact_on_innovation" strongly positively correlates with the independent variable "AI_utilization" at 0.817, which is statistically significant at $p<0.001$. At the same time, "Impact_on_innovation" has a very weak correlation with the other two independent variables: "AI_enhance_innovation" and "AI_contribute_creativity," with a value of 0.079, and is not statistically significant. The two independent variables "AI_enhance_innovation" and "AI_contribute_creativity" are perfectly correlated with each other, with a correlation coefficient of 1.000. The independent variable "AI_utilization" is very weakly negatively correlated with the other two independent variables; however, all such correlations are not statistically significant.

Indeed, the first model, as revealed by the data, has a weak correlation between independent variable "AI contribute creativity" and dependent variable "Impact on innovation". The R-squared value is 0.006, thereby explaining only 0.6% of the variation in the dependent variable. The adjusted R-squared comes to be -0.003, which means there is no predictive power. The standard error of the estimate is 0.798 units, while change statistics show no statistical significance. The predictive ability for out-of-sample conditions, as suggested by model selection criteria, is not very good in the estimated models. The second model has a strong correlation and is well predictive, making it suitable for the data.

Journal Business Administration (JBA) Vol. 04, No.01 (2025) 1-21

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Selection Criteria				PRESS	Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	Akaike Information Criterion	Amemiya Prediction Criterion	Mallows' Prediction Criterion	Schwarz Bayesian Criterion		
1	.079[a]	.006	-.003	.798	.006	.662	1	106	.418	-46.872	1.031	233.140[b]	-41.507		
2	.831[c]	.690	.685	.447	.684	232.140	1	105	<.001	-170.858	.327	3.000[b]	-162.811	22.874	2.141

a. Predictors: (Constant), AI contribute creativity
b. Multicollinearity is present. The following variables were not included in the full model used for calculation of the Mallows' Prediction Criterion: AI enhance innovation
c. Predictors: (Constant), AI contribute creativity, AI utilization
d. Dependent Variable: Impact on Innovation

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.421	1	.421	.662	.418[b]
	Residual	67.430	106	.636		
	Total	67.852	107			
2	Regression	46.851	2	23.426	117.124	<.001[c]
	Residual	21.001	105	.200		
	Total	67.852	107			

a. Dependent Variable: Impact on innovation
b. Predictors: (Constant), AI contribute creativity
c. Predictors: (Constant), AI contribute creativity, AI utilization

The result for the regression sum of squares indicates that the independent variable "AI contribute creativity" explains only a very small part in the dependent variable "Impact on innovation." The sum of squares residuals is 67.430, indicating other factors that are not accounted for with these variables. No effect is significantly large as can be seen from the F-statistic 0.662. The results under model 2 have the two independent variables "AI enhance innovation" and "AI utilization" that account for most variability.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3.527	.632		5.581	<.001	2.274	4.779		
	AI contribute creativity	.117	.144	.079	.814	.418	-.168	.403	1.000	1.000
2	(Constant)	.525	.405		1.294	.199	-.279	1.328		
	AI contribute creativity	.229	.081	.154	2.825	.006	.068	.390	.992	1.008
	AI utilization	.801	.053	.831	15.236	<.001	.697	.906	.992	1.008

a. Dependent Variable: Impact on innovation

The independent variables considered in the study are AI contribute creativity and AI utilization. According to these unstandardized coefficients, their relationship and combined driving force of innovation are weak, evidenced by values of 0.814 of the t-statistic and a corresponding 95% confidence interval of 0 for the effect of AI contribute creativity. The unstandardized coefficients for AI Utilization and AI Contribute Creativity, in contrast, were more potent, with corresponding t-statistics equal to 2.825 and 15.236, respectively, indicating a significant effect on the dependent variable. Furthermore, the 95% confidence intervals for the coefficients of AI Utilization and AI Contribute Creativity exclude zero.

Journal Business Administration (JBA) Vol. 04, No.01 (2025) 1-21

Casewise Diagnostics[a]

Case Number	Std. Residual	Impact on innovation	Predicted Value	Residual
4	-3.169	3	4.42	-1.417
32	-3.169	3	4.42	-1.417
60	-3.169	3	4.42	-1.417
86	-3.681	3	4.65	-1.646
98	-3.681	3	4.65	-1.646

a. Dependent Variable: Impact on innovation

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	AI contribute creativity	AI utilization
1	1	1.993	1.000	.00	.00	
	2	.007	16.404	1.00	1.00	
2	1	2.945	1.000	.00	.00	.01
	2	.048	7.803	.02	.08	.87
	3	.007	21.143	.98	.92	.13

a. Dependent Variable: Impact on innovation

It has one dimension—eigen value—with a value of 1.993, indicating one independent variable. The Condition Index is 1.000, indicating no collinearity problems. The Variance Proportions for the constant and the independent variable are both 0.00—a pointer to no multicollinearity. The second model has three dimensions, eigenvalues, with a Condition Index of 2.945, 0.048, and 0.007. The Variance Proportions for the constant and AI utilization are both 0.00.

The descriptive statistics of the data is depicted by the mean, standard deviation, and sample size (N) of 4 variables: Impact_on_innovation, AI_enh.From the correlation matrix, AI contribute creativity correlates highly positively (0.817) with Impact on innovation, while AI utilization correlates negatively but weakly (-0.091) with. The regression analysis reveals that AI explains a full significant 68.5% of the variance in predicting Impact on Innovation, which is additionally increased significantly when the second independent variable, AI Utilization, is added.

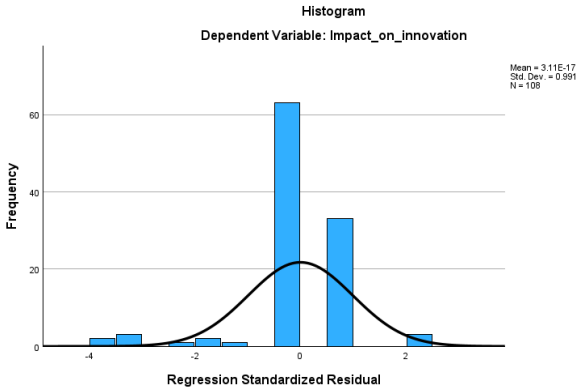

Figure 7. regression standardized residuals of the dependent variable "Impact_on_innovation

This graph illustrates the histogram of the regression standardized residuals of the dependent variable "Impact_on_innovation". The histogram is a graphical impression of how the residuals from the regression model are distributed.The residuals' average equals 3.11e-17, which shows it to be a well-calibrated model and not systematically over- or under-predicting the dependent variable.The standard error is 0.991, so the residuals are tight around the mean.The distribution appears basically normal in that it peaks around 0 and tapers onto both sides. That's a very good property for the residuals, because it means that the assumptions underlying the model are likely to be met.

This histogram, hence, insinuates that the regression model is doing a great job in capturing the trends in the data and coming up with reasonable predictions for the "Impact_on_innovation" variable. The normal distribution of the residuals tells that the model is well-specified and the assumptions are verified.

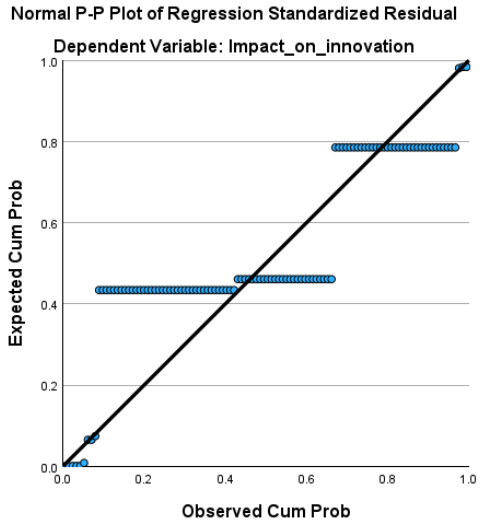

Figure 8. Regression Standardized Residuals Of The Dependent Variable "Impact on innovation". Normal P-P

Normal P-P Plot of the Regression Standardized Residuals of the dependent variable "Impact_on_innovation". The P-P plot of a diagnostic can be used to go back and check if the residual quantities are normally distributed. The data points lie very close to the 45-degree reference line, thus suggesting that the residuals are approximately normally distributed. Also, there are no large deviations and systematic patterns in the plotted points, again confirming the assumption of normality. The points are clumped closely around the reference line, which suggests that the residuals have constant variance (homoscedasticity).

The results confirm the normal distribution as seen already in the histogram offered previously. The two diagnostic plots, then, provide evidence of a well-specified regression model and that the underlying assumptions are met.

The fact that all the points lie close to the reference line indicates that the model is producing normally distributed residuals, prerequisite to the validity of the general statistical inferences drawn. This builds confidence in having reliable and interpretable results from the model.

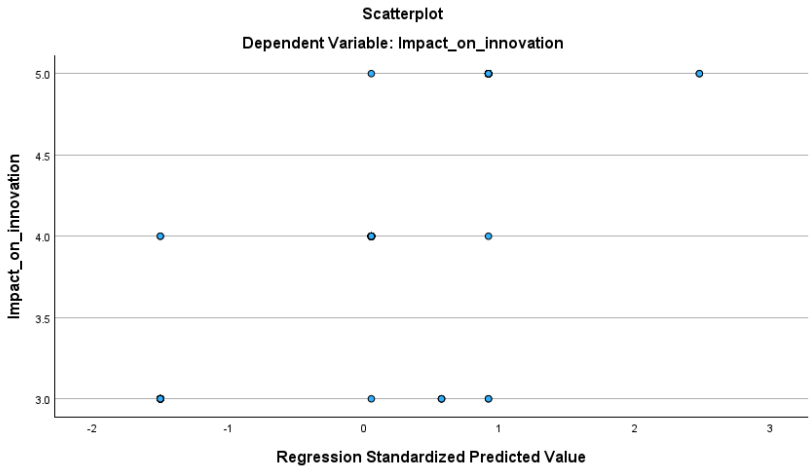

Figure 9. Dependent Variable "Impact on innovation

This scatterplot describes the relationship between the regression standardized predicted values and the dependent variable "Impact on innovation". This plot includes more insights about the performance of the regression model. The points are found to be relatively closely packed around the regression line, indicating less dispersion and good linearity between the predicted values and the observed values of "Impact on innovation". A positive trend is clear in this graph: as the observed "Impact on innovation" values increase, the predicted values increase. This is in line with the positive regression coefficients found in the previous

analysis. The dots are distributed relatively equally above and below the regression line. This already seems to indicate that there will not be clear patterns or outliers. As a result, the model seems to capture the underlying relationship well, and residuals will be homoscedastic.

These are the predicted values, ranging from approximately -1 to 2, that correspond to the range of observed values for "Impact on innovation" in this data. The scatterplot hence confirms the strong predictive power of the regression model to be in the tight clustering of the points around the regression line. Again, this representation finds a base in the previous diagnostic checks that further support the validity and reliability of the model to explain the variation in the "Impact on innovation" variable.

5. Conclusion

The study provides strong evidence on the influence of AI adoption and capabilities on creativity and innovation within businesses. At the same time, vigorous multiple regression analyses deliver results that yield substantial insights relating to the transformative potential of AI within the landscape of business enterprises. H1: AI adoption positively influences creativity in businesses. Results indicate that the influence of AI adoption on creativity is rather subtle. Noticeably, "AI utilization" exerts a statistically significant negative effect on creativity, while the case of "AI in business" does not prove to be significant. Even if these findings explain just a small portion of variation in creativity, they underline the critical necessity of strategic AI utilization in fostering creativity. H2: AI capability positively affects organizational creativity. The research finds strong evidence that "AI contributes to creativity" with high statistical significance, high variance explanation. In other words, it will portray the strength of AI capabilities as the driver of creative processes in a business and vindicate that strategic importance lies in harnessing AI for better creative outcomes. H3: Business innovation is influenced by AI adoption. It can be noticed that the fitted regression model shows "AI utilization" having a large, positive effect on innovation at high levels of statistical significance, while no significant effect of "AI in business" has been found. Results strongly support the notion that effective integration of AI tools might be one of the factors responsible for boosting innovation. H4: AI Capabilities have a positive effect on business innovation: As expected, "AI contributes to creativity" does not significantly influence innovation, and the model's explanatory power is extremely low. Said differently, although AI capabilities improve creativity, their direct influence on innovation can be complemented by other factors or conditions not controlled by this research. H5: Mediation of AI adoption on business innovation with creativity. A more interesting set of findings is obtained from the mediation analysis on the fact that variable "AI utilization" influences innovation.

Once the mediator "AI contribute to creativity" was added, most of the variance explained in innovation was captured by the model. These results indicate that AI adoption indirectly induces innovation mediated through creativity, thus proving their interrelationship. Implications The results clearly demonstrate the transformation power of AI influence that interjects business creativity and innovation. On the other hand, while AI use is shown to be one more imperative driver, its mere adoption sans strategy concerning its application does not automatically justify an augmentation in creativity or innovation. It is, therefore, the incumbency of businesses to ensure that the deployment of effective AI utilization and capabilities in support of creativity are at core and can yield large innovative gains. Limitations/Future Research Although the research provides several key insights, the explanatory power for some models was relatively low and indicates presence of other variables impacting creativity and innovation that were not considered. Future studies have to increase the scope of factors and contingencies that might enlarge the effect of AI adoption and capabilities. This will go on to increase the scope for understanding the maximization of creativity and innovation of businesses through AI.

References

Akter, S., Michael, K., Uddin, M. R., McCarthy, G., & Rahman, M. (2020). *Transforming Business Using Digital Innovations: The Application Of AI, Blockchain, Cloud And Data Analytics*. https://www.semanticscholar.org/paper/Transforming-business-using-digital-innovations:-of-Akter-Michael/a44dff5c3376b5029c8dff928d5c0c5272537e4b

Artificial intelligence and its impacts on the society. https://www.atlassian.com/blog/teamwork/decision-making-process

A Survey on the Convergence of Edge Computing and AI for UAVs: Opportunities and Challenges. (2022). IEEE Journals & Magazine | IEEE Xplore. http://doi.org/10.1109/JIOT.2022.3176400

A Survey on the Convergence of Edge Computing and AI for UAVs: Opportunities and Challenges. (2022). IEEE Journals & Magazine | IEEE Xplore. https://ieeexplore.ieee.org/document/9778241

Boogaard, K. (2023). Decision-Making Process: Steps, Tips, and Strategies WorkLife Blog -Work Life by Atlassian. Work Life by Atlassian

Burström, T., Parida, V., Lahti, T., & Wincent, J. (2021). *AI-enabled business-model innovation and transformation in industrial ecosystems: A framework, model and outline for further research*. Journal of Business Research. https://doi.org/10.1016/j.jbusres.2021.01.016

Braver, et al. (2014). *Mechanisms of motivation–cognition interaction: challenges and opportunities*. Cognitive, Affective, & Behavioral Neuroscience. https://doi.org/10.3758/s13415-014-0300-0

Business Model Innovation for Sustainability. (2016).: Towards a Unified Perspective for Creation of Sustainable Business Models. Researchgate. Retrieved March 3, 2024, from https://www.researchgate.net/publication/316428208_Business_Model_Innovation_for_Sustainability_Towards_a_Unified_Perspective_for_Creation_of_Sustainable_Business_Models

Cetinić, E., & She, J. (2022). *Understanding and Creating Art with AI: Review and Outlook*. ACM Transactions on Multimedia Computing, Communications, and Applications. https://doi.org/10.1145/3475799

Chattopadhyay, H., & Majumdar, D. (2020). Artificial intelligence and its impacts on the society. ResearchGate. https://www.researchgate.net/publication/345896219

Clementson, J., & Clementson, J. (2023, December 18). *Creativity: Why it is Important in the Marketplace – Azura*. Azura –. https://azuramagazine.com/articles/creativity-why-it-is-important-in-the-marketplace

Chen, Y., & Bellavitis, C. (2019, January 1). *Blockchain Disruption and Decentralized Finance: The Rise of Decentralized Business Models*. Social Science Research Network. https://doi.org/10.2139/ssrn.3483608

Chen, Y., Wang, Y., Nevo, S., Benítez-Amado, J., & Kou, G. (2015). *IT capabilities and product innovation performance: The roles of corporate entrepreneurship and competitive intensity*. Information & Management. https://doi.org/10.1016/j.im.2015.05.003

Colson, E. (2021, August 31). *What AI-Driven Decision Making Looks Like*. Harvard Business Review. https://hbr.org/2019/07/what-ai-driven-decision-making-looks-like

Collins, C., Dennehy, D., Conboy, K., & Mikalef, P. (2021, October 1). *Artificial intelligence in information systems research: A systematic literature review and research agenda*. International Journal of Information Management. https://doi.org/10.1016/j.ijinfomgt.2021.102383

Colquitt, J. A., LePine, J. A., & Wesson, M. J. (2019). Organizational behavior: Essentials for improving performance and commitment (6th ed.). Boston: McGraw-Hill.

Clementson, J., & Clementson, J. (2023, December 18). *Creativity: Why it is Important in the Marketplace Azura*. Azura. https://azuramagazine.com/articles/creativity-why-it-is-important-in-the-marketplace

Da Bormida, M. (2021). *The Big Data World: Benefits, Threats and Ethical Challenges*. Advances in Research Ethics and Integrity. https://doi.org/10.1108/s2398-601820210000008007

De Smet, A., Jost, G., & Weiss, L. (2019, May 1). *Three keys to faster, better decisions*. McKinsey & Company. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/three-keys-to-faster-better-decisions

Eapen, T. T. (2023, June 13). *How Generative AI Can Augment Human Creativity*. Harvard Business Review. https://hbr.org/2023/07/how-generative-ai-can-augment-human-creativity

Embracing Creativity: How AI Can Enhance the Creative Process. (n.d.). sps.nyu.edu. https://www.sps.nyu.edu/homepage/emerging-technologies collaborative/blog/2023/embracing-creativity-how-ai-can-enhance-the-creative-process.html

Füller, J., Hutter, K., Wahl, J., Bilgram, V., & Tekic, Z. (2022). *How AI revolutionizes innovation management – Perceptions and implementation preferences of AI-based innovators*. Technological Forecasting and Social Change. https://doi.org/10.1016/j.techfore.2022.121598

George, G., McGahan, A., & Prabhu, J. (2012). *Innovation for Inclusive Growth: Towards a Theoretical Framework and a Research Agenda*. https://www.semanticscholar.org/paper/Innovation-for-Inclusive-Growth%3A-Towards-a-and-a-George-McGahan/28955fa06bfad80127238de6525d035f9b421347

Haan, K. (2023). *How Businesses Are Using Artificial Intelligence In 2024*. Forbes Advisor. https://www.forbes.com/advisor/business/software/ai-in-business/

Hartley, J., Rønning, R., Fuglsang, L., & Geuijen, K. (2022). *Innovation Concepts and Processes*. Springer eBooks. https://doi.org/10.1007/978-3-031-15203-0_2

Hassan, M. (2023). *Mixed Methods Research - Types & Analysis - Research Method*. Research Method. https://researchmethod.net/mixed-methods-research/

Herath, H., & Mittal, M. (2022). *Adoption of artificial intelligence in smart cities: A comprehensive review*. International Journal of Information Management Data Insights. https://doi.org/10.1016/j.jjimei.2022.100076

Janssens, C., Havlík, P., Krisztin, T., Baker, J., Frank, S., Hasegawa, T., Leclère, D., Ohrel, S., Ragnauth, S., Schmid, E., Valin, H., Van Lipzig, N., & Maertens, M. (2021). *International trade is a key component of climate change adaptation*. Nature Climate Change. https://doi.org/10.1038/s41558-021-01201-8

Kiel, D., Arnold, C., & Voigt, K. (2017). *The influence of the Industrial Internet of Things on business models of established manufacturing companies – A business level perspective*. Technovation. https://doi.org/10.1016/j.technovation.2017.09.003

Lee, M. C. M., Scheepers, H., Lui, A. K., & Ngai, E. W. (2023). *The implementation of artificial intelligence in organizations: A systematic literature review*. Information & Management. https://doi.org/10.1016/j.im.2023.103816

Nosratabadi, S., Mosavi, A., Shamshirband, S., Zavadskas, E., Rakotonirainy, A., & Chau, K. (2019). *Sustainable Business Models: A Review*. https://www.semanticscholar.org/paper/Sustainable-Business-Models%3A-A-Review-Nosratabadi Mosavi/a8a2e5db4f5276ac0d475636dffda690b7d4ddd9

Onetti, A., Zucchella, A., Jones, M., & McDougall–Covin, P. P. (2010). *Internationalization, innovation and entrepreneurship: business models for new technology-based firms*. Journal of Management & Governance. https://doi.org/10.1007/s10997-010-9154-1

Oltmann, S. M. (2016). *Qualitative Interviews: A Methodological Discussion of the Interviewer and Respondent Contexts*. ResearchGate. https://www.researchgate.net/publication/304876962_Qualitative_Interviews_A_Methodological_Discussion_of_the_Interviewer_and_Respondent_Contexts

Peković, S., & Vogt, S. (2020). The fit between corporate social responsibility and corporate governance: the impact on a firm's financial performance. *Review of Managerial Science*, *15*(4), 1095–1125. https://doi.org/10.1007/s11846-020-00389-x

Prabhu, J., & Jain, S. (2015). *Innovation and entrepreneurship in India: Understanding jugaad*. https://www.semanticscholar.org/paper/Innovation-and-entrepreneurship-in-India%3A-jugaad-Prabhu-Jain/6d73db449afdafa02cc09e6e384bb244c8218f13

Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Eva, S. (2019). *Digitalization and its influence on business model innovation*. Journal of Manufacturing Technology Management. https://doi.org/10.1108/jmtm-01-2018-0020

Rahmaniar, W., Ma'arif, A., Haq, Q. M. U., & Iskandar, M. E. (2023). *AI in Industry: Real-World Applications and Case Studies*. https://doi.org/10.36227/techrxiv.23993565

Richter, M. (2013). *Business model innovation for sustainable energy: German utilities and renewable energy*. Energy Policy. https://doi.org/10.1016/j.enpol.2013.05.038

Rindova, V. (2022). *Unlocking the Hidden Value of Concepts: A Cognitive Approach to Business Model Innovation*. www.academia.edu. https://www.academia.edu/86914650/Unlocking_the_Hidden_Value_of_Concepts_A_Cognitive_Approach_to_Business_Model_Innovation

Roy, R. (2023). *What is Innovation? Definition, Types, Examples and Process - IdeaScale*. IdeaScale. https://ideascale.com/blog/what-is-innovation/

Saebi, T., & Foss, N. J. (2015, June 1). *Business models for open innovation: Matching heterogeneous open innovation strategies with business model dimensions*. European Management Journal. https://doi.org/10.1016/j.emj.2014.11.002

Sarooghi, H., Libaers, D., & Burkemper, A. C. (2015, September 1). *Examining the relationship between creativity and innovation: A meta-analysis of organizational, cultural, and environmental factors*. Journal of Business Venturing. https://doi.org/10.1016/j.jbusvent.2014.12.003

Shvets, D. (2022). *How AI Creativity Affects Human Art And Business*. Forbes. https://www.forbes.com/sites/forbesbusinesscouncil/2022/12/19/how-ai-creativity-affects-human-art-and-business/?sh=533072f2227f

Siemens, G., Marmolejo-Ramos, F., Gabriel, F., Medeiros, K. E., Marrone, R., Joksimovíc, S., & De Laat, M. (2022). *Human and artificial cognition*. Computers & Education: Artificial Intelligence. https://doi.org/10.1016/j.caeai.2022.100107

Sjödin, D., Parida, V., Palmié, M., & Wincent, J. (2021). *How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops*. Journal of Business Research. https://doi.org/10.1016/j.jbusres.2021.05.009

Soori, M., Arezoo, B., & Dastres, R. (2023). *Artificial intelligence, machine learning and deep learning in advanced robotics, a review*. Cognitive Robotics. https://doi.org/10.1016/j.cogr.2023.04.001

Sun, T., Liu, X., Qiu, X., & Huang, X. (2022). *Paradigm Shift in Natural Language Processing*. Machine Intelligence Research. https://doi.org/10.1007/s11633-022-1331-6

Sunder, J., Sunder, S. V., & Zhang, J. (2014). *CEO Sensation Seeking and Corporate Innovation*. Social Science Research Network. https://doi.org/10.2139/ssrn.2474909

STATEMENT: Indonesia Submits New 2030 Climate Targets and First Long-Term Climate Strategy. (n.d.). World Resources Institute. https://www.wri.org/news/statement-indonesia-submits-new-2030-climate-targets-and-first-long-term-climate-strategy

Unlocking the hidden value of concepts : a cognitive approach to business model innovation. (n.d.). EconBiz. https://www.econbiz.de/Record/unlocking-the-hidden-value-of-concepts-a-cognitive-approach-to-business-model-innovation-martins-luis/10011299535

V. (2023). *Understanding the different types of innovation at the heart of change | Stanford Online*. Stanford Online. https://online.stanford.edu/understanding-different-types-innovation-heart-change

Wamba-Taguimdje, S. L., Wamba, S. F., Kamdjoug, J. R. K., & Wanko, C. E. T. (2020). *Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects*. Business Process Management Journal. https://doi.org/10.1108/bpmj-10-2019-0411

Wilson, H. J. (2019). *How Humans and AI Are Working Together in 1,500 Companies*. Harvard Business Review. https://hbr.org/2018/07/collaborative-intelligence-humans-and-ai-are-joining-forces

Woon, E. Y. S., & Pang, A. (2017). *Explicating the information vacuum: stages, intensifications, and implications*. Corporate Communications: An International Journal. https://doi.org/10.1108/ccij-10-2016-0066

What Is AIOps? (2023). Cisco. https://www.cisco.com/c/en/us/solutions/artificial-intelligence/what-is-aiops.html

Xie, X., & Wang, H. (2021). *How to bridge the gap between innovation niches and exploratory and exploitative innovations in open innovation ecosystems*. Journal of Business Research. https://doi.org/10.1016/j.jbusres.2020.11.058

Zharovskikh, A. (2023). *How artificial intelligence will change decision making*. InData Labs. https://indatalabs.com/blog/artificial-intelligence-decision-making