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AI Competence's Impact on Innovation in The Creative Industries: Moderating Role of Individual Creativity

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ABSTRACT

This research aims to investigate the relationship between Artificial Intelligence (AI) competence and innovation, as well as the moderating effect of creativity in the context of Indonesian creative industries. The objectives are accomplished by conducting surveys and analyzing the data using a quantitative approach. Samples are workers in various sectors of the creative industries in Indonesia, with a minimum age of 18. The data was collected by using a non-probability, convenience sampling method. 268 completed questionnaires were collected from the eligible samples. The results of hypothesis testing using PLS-SEM indicate that AI competence has a significantly positive impact on innovation. While individual creativity moderates the relationship between AI competence and innovation. Intriguingly, this moderating effect goes in the negative direction. For the theoretical implication, the effect of creativity in enhancing competence, especially in using new technology, should be studied further by more rigorous research. In addition, this research suggests that the creative industries stakeholders should provide sufficient training for creative workers, allowing them to develop their competence in using AI programs related to their job or tasks.

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Introduction

The development of creative industries has made a real contribution to the economy in various countries, as shown by clear evidence (Istiqamah & Zakik, 2024). In Indonesia, creative industries are continuously undergoing development, with a percentage of national GDP amounting to 7.38% in 2020 (Ferdiansyah, 2025). Indonesia is ranked third in the world in terms of countries whose GDP is contributed to by the creative economic sector (Ausat et al., 2023). Moreover, Indonesian creative industries contribute greatly to creating jobs. Approximately, there were 17,4 million people who work in the various sectors of Indonesian creative industries in 2023, a significant increase compared to 13,4 million in 2011 (Rozikin & Tasrif, 2023). Due to their significance, it is important to figure out the effective strategies for fostering the performance and competitiveness of Indonesian creative industries.

Some challenges related to competitiveness are caused by the lack of innovation (Prasetiyo et al., 2025). Moreover, many previous studies have suggested that innovation has a positive relationship with firm performance (Ndesaulwa & Kikula, 2016). For example, an empirical finding has confirmed that product innovation has a positive impact on firm performance and competitiveness (Castillo-Vergara & García-Pérez-de-Lema, 2021). Moreover, a systematic review study also concludes that, generally, open innovation has a positive impact on firm performance. (Bigliardi et al., 2020). To summarize, innovation is very pivotal for performance and competitiveness.

Some studies indicate that one of the major factors fostering innovation is the application of new technology. A study suggests that ICT is strongly associated with innovation and productivity (Hall et al., 2013). Another finding also indicates that ICT contributes positively to innovation and productivity (Alvarez, 2016). An empirical finding supports the idea that ICT capability has a positive influence on innovation performance (Parida & Ortqvist, 2015). Moreover, selected digital communication technologies, including social media and business mobile phones, have a positive impact on innovation (Gaglio et al., 2022).

One of the most remarkable technological developments that has made a profound difference in many aspects of society recently is the rapid development of artificial intelligence (AI). In recent years, artificial intelligence (AI) has drawn massive attention for driving significant impact on businesses across many sectors, especially since the massive hype surrounding the launch of ChatGPT, a type of generative AI program (Holmström & Carroll, 2024). Since then, numerous studies have studied the impact of artificial intelligence on innovation. A study highlighted the capabilities of AI, especially generative AI, in fostering various aspects of innovation within the organization. In the aspect of organization, new generative AI enables decision-making to proceed quickly and accurately, which is supportive of facilitating the development of new products and services (Corvello, 2025).

Another finding implies that both AI competencies and design thinking skills significantly improve the innovation capability of entrepreneurs (Imjai et al., 2024). This study stressed the critical importance of developing AI capabilities amongst new entrepreneurs, which not only impacts innovation and competitiveness but also provides significant benefits to the economy and society. Moreover, another study suggests that Gen AI has significant potential to augment human creativity and innovation processes as a collaborative partner (Sedkaoui & Benaichouba, 2024). However, this study also underlined the necessity for a deep knowledge of AI to fully harness its capabilities.

Despite AI's usefulness in the innovation processes, some scholars are questioning the accuracy of ideas generated by AI. Ideas and advice generated from AI may be inaccurate, especially when the AI is a general model AI that utilizes public data (Piller et al., 2024). Thus, to optimally leverage AI for innovation, firstly, managers should distinguish between a general AI model and an expert AI model, as well as assess the level of trust required based on task-specific needs. During the ideation and discovery phases, where creativity and unconventional thinking are pivotal, the inaccuracies of a general AI model can be viewed

as an advantageous feature rather than a defect. On the other hand, in the advanced stages of product development, where domain-specific knowledge and precision are indispensable, reliance on expert AI models becomes necessary (Piller et al., 2024). In addition, managers may harness a generative AI program for innovation effectively by aligning their innovation objectives with the appropriate strategy, whether it be enhancing creative processes or streamlining operational efficiency (Holmström & Carroll, 2024).

Due to its advantageous nature, AI is widely used in various industrial sectors recently, with no exception in creative industries. Creative industries are the end users of various types of technology, and thus, these industries often demand the development of new technologies (Müller et al., 2008). AI is offering many creative possibilities within culture and the arts (Miltner & Highfield, 2023). Even though AI has a massive potential for creative industries, the limitations of technological competence among creative workers in Indonesia may hinder them from unlocking the full potential of this technology. Some actors in Indonesian creative industries, especially those from the older generation, have difficulty in utilizing technology (Ferdiansyah, 2025). Even though many studies have proven that the utilization of AI may be supportive for innovation, the number of studies specifically discussing the relationship between AI competence and innovation in the context of Indonesian creative industries is still lacking. In addition, presumably, there is no previous research specifically studying the role of creativity in enhancing competence in using AI, especially in the context of Indonesian creative industries. These research gaps are necessary to be explored further in order to confirm the role of AI competence on innovation, as well as to confirm the role of creativity in fostering technological competence and innovation.

Thus, it is intriguing to explore the aforementioned relationships. The objectives of this research are to examine the effect of AI competence among individuals in Indonesian creative industries on innovation within their organizations or businesses, and to investigate the moderating role of individual creativity in strengthening the relationship between AI competence and innovation.

Literature Review

Creative Industries

Creative industries are an economic sector that primarily depends on individual creativity, skill, and talent. (Müller et al., 2008). Creative industries are boldly defined by the UK Creative Industries Task Force (CITF) as economic activities that have their origin in individual creativity, skill, and talent and have the potential to generate jobs and wealth through the creation and exploitation of intellectual property. (Cunningham, 2002). Indonesia Ministry of Tourism and Creative Economy (Kemenparekraf) classifies creative industries into following seventeen sectors: culinary, game development, craft, interior design, music, fine art, product design, fashion, video (including movie and animation), photography, visual design, broadcasting (TV and radio), architecture, advertising, performance art (drama, dance, etc.), publishing, and software or application (https://kemenparekraf.go.id). Creative industries are characterized as economic sectors that focus on creating innovative and value-added ideas based on creativity and the utilization of knowledge (Astuty et al., 2018). Human creativity and intellect are the most essential elements in creative industries since these industries are characterized by “mind” services. (Song et al., 2019).

Innovation

Innovation is a process containing the sequence of various activities performed to realize an opportunity and bring an idea to market (Füller et al., 2022). Innovation can be perceived as a means of changing, either as a response to changes in the external environment or as a pre-emptive action to make an impact on the environment. Innovation is often distinguished into two categories, namely product and process innovations. Product innovation pertains to the invention or the opening of a new market, while process innovation pertains to the improvements in production efficiencies (Azmat et al., 2023).

Innovation is an attempt to generate and apply ideas that result in significant, positive change. Key criteria of innovation include creativity, novelty and usefulness, impact, ethical consideration, value generation, feasibility, and viability (Mohammadabadi, 2025). Some studies suggest that innovation, especially product innovation, can generate the emergence of new kinds of products, firms, and business sectors. The launching of the new products and the consequent emergence of new markets may finally generate job creation (Vivarelli, 2007).

AI Competence

Scholars define artificial Intelligence (AI) as the simulation of human intelligence in computational systems or machines that enable them to carry out tasks that typically require human cognition. (Marrone et al., 2024). Basically, AI can be categorized into two main categories: narrow or weak AI, and general or strong AI. Narrow AI is a system developed and trained for a particular task, while strong AI is a system that possesses generalized human cognitive abilities, enabling it to solve more complex problems without human involvement. (Sajja, 2021). Specifically, narrow AI has multiple characteristics, such as it is applicable only to narrow or specific areas, possesses below human-level intelligence, and is incapable of autonomously carrying out problem-solving tasks in other areas; however, it has the potential to outperform humans in the specific area. (Kaplan & Haenlein, 2019).

Competence can be defined as the combination of knowledge, skills, and abilities to perform tasks, even if the tasks are completely new or require innovative action. AI competence, thus, may be regarded as a set of skills and capabilities of a person to tackle the new and often challenging tasks related to using AI (Ebert & Hemel, 2024). AI competencies allow individuals to critically evaluate AI technologies, collaborate and communicate effectively with AI, and utilize AI as a tool online, at various places or environments. (Long & Magerko, 2020).

Numerous studies have studied the impact of artificial intelligence on innovation. A study highlighted the capabilities of AI, especially generative AI, in fostering various aspects of innovation within the organization. In the aspect of organization, New generative AI enables the decision-making processes to proceed quickly and accurately, which is supportive of facilitating the development of new products and services. In addition, new generative AI can augment human creativity, allowing it to collaborate with human users in generating novel ideas and exploring innovative solutions (Corvello, 2025). Another finding implies that both AI competencies and design thinking skills significantly improve the innovation capability of entrepreneurs. (Imjai et al., 2024). Moreover, another study suggests that Gen AI has significant potential to augment human creativity and innovation processes as a collaborative partner. (Sedkaoui & Benaichouba, 2024). Since numerous studies suggest that AI is supportive of innovation, the following hypothesis is proposed.

H1. AI Competence has a positive impact on Innovation

Individual Creativity as A Moderator

Stenberg and Lubart defined creativity as the generation of novel and useful ideas (Caniëls & Rietzschel, 2015). Creativity allows the production of new and useful ideas in any field of expertise or domain. An idea or a product must be different from what has been done previously to be categorized as a creative idea. However, more importantly, the idea should also be appropriate to the goal, correct, valuable, and expressive (Amabile, 1996). Creativity and ideas are the most important capital for creative industries (Kostromina et al., 2023). Creative industries are conceptualized as economic sectors that focus on creating innovative and value-added ideas based on creativity and the utilization of knowledge (Astuty et al., 2018).

Creative industries are distinctive in terms of human resources and workers' characteristics, as these industries are organized to take advantage of and capture the value of human creativity (Jones et al., 2015). In the context of this study, the connections of creativity-innovation and creativity-competence will be put forward as a focus.

It is scholarly accepted that creativity is closely related to innovation. Creativity is the generation of novel ideas, while innovation is perceived as the efforts to introduce, modify, promote, and implement those new ideas (Hughes et al., 2018). Individual creativity, together with organizational innovation, is such an intertwined system. While creativity is a process, innovation is the final output. Broadly speaking, individual creativity is the most essential element of organizational innovation. However, it is not sufficient by itself (Amabile, 1988). Based on these arguments, creativity itself will be beneficial for innovation.

Especially in this study, the main focus is to investigate the role of creativity in enhancing the impact of AI competence on innovation. Indeed, recent studies highlighted that AI and human creativity can collaborate in the creative process through the mechanism of co-creation (Marrone et al., 2024). For example, new generative AI can augment human creativity, allowing it to collaborate with human users in generating novel ideas and exploring innovative solutions. (Corvello, 2025). However, the potential role of creativity in enhancing competence in using new technology, in this case, AI, is still questionable. An empirical study suggests that creative people adapt better to new things. A series of linear regression analyses in this study revealed that motor creativity was significantly associated with the probability of adaptation. Furthermore, flexibility in motor creativity predicted perception of task difficulty, whereas originality was a predictor of persistent behavior.

Those are the key determinants for adaptability. (Richard et al., 2018). Based on this previous finding, it can be preliminarily assumed that creativity has a potential supportive role in helping individuals to adapt and to optimize the usage of new technology, in this case is AI. Complexity in using an innovative thing like AI can be a barrier for some individuals (Fauziah et al., 2025). Creativity may assist individuals to adapt and deal with such complex technology as AI. Since the number of research studied this relationship is very limited, this relationship must be tested further. Thus, it is arguably intriguing to examine the role of creativity in enhancing the effect of AI competence on innovation.

H2. Creativity enhances the impact of AI Competence on Innovation

Methodology

Based on the aforementioned hypotheses, this research tried to develop a model to be examined through this research. The main novelty of this model is the placement of individual creativity as a moderator for AI competence and innovation. Since presumably there are no previous studies that examine the same model as this model, it is assumed that this model has its own novelty. Thus, instead of using a confirmatory approach for this study, an exploratory approach will be adopted.

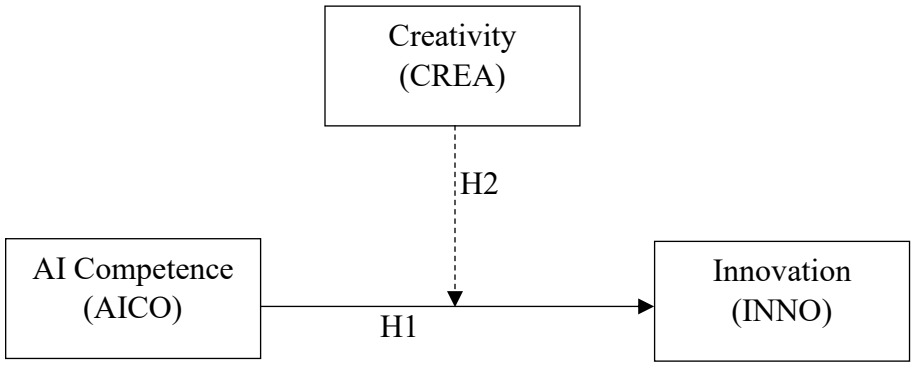

Figure 1. Research Model

Source: Author (2025)

This exploratory study is conducted by collecting and analyzing the data, as well as carrying out hypothesis examinations in order to test the research model. Nonprobability sampling, specifically the convenience sampling method, is employed in this exploratory research. Non-probability sampling is appropriate and sufficient for exploratory research intended to produce new ideas that will be systematically tested later (Alvi, 2016). Although this kind of sampling method disallows the researcher from drawing inferences and making generalizations about a population, non-probability sampling can be very helpful for researchers when the study approach is exploratory or when randomization is impossible, like when the population is very large, and the researcher has limited resources. (Etikan et al., 2016).

In order to align with the methodological approach, some respondent criteria are set for this study. Basically, those who are working in Indonesian creative industries during the effective survey period, with a minimum age of 18, will be eligible to be a respondent. In addition, the samples should be those who are involved in the design or planning process of creative products. This criterion is set to ensure that the samples have something to do with product innovation in their respective organization or their own business. Moreover, the samples should be those who are, more or less, helped by an AI-based program in doing their tasks. This additional criterion is set in order to make sure that the samples have a sufficient understanding to figure out what AI is. According to the official website administered by Indonesia Ministry of Tourism and Creative Economy (Kemenparekraf), creative industries are the industries operating in one of the seventeen sectors as follows: game development, craft, interior design, music, fine art, product design, fashion, culinary, video (including movie and animation), photography, visual design, broadcasting (TV and radio), architecture, advertising, performance art (drama, dance, etc.), publishing, and software or application (https://kemenparekraf.go.id). Hence, the respondents are selected from these industrial sectors.

The data collected from the surveys will be analyzed using Partial Least Squares Structural Equation Model (PLS-SEM) in order to examine the proposed hypotheses. Basically, there are two main categories of structural equation model (SEM) method widely used by researchers: covariance-based SEM (CB-SEM) and variance-based partial least squares (PLS-SEM). PLS-SEM should be prioritized over CB-SEM when the analysis is concerned with testing a model or framework from a prediction perspective (Hair

et al., 2019). Since this research is an exploratory study using a predictive approach, thus, PLS-SEM is selected as the main analytical tool to test two hypotheses within the model.

In order to measure some constructs in the model precisely, researchers developed a set of instruments by adopting some items from previous studies, as well as by designing some others. Several adopted items will be modified or reworded in order to suit the contexts of study. A Seven-points Likert scale was employed to measure three constructs in the model. The complete list of items is as follows.

Table 1. Measurement Items

Construct	Code	Item	Source
Innovation	Inno_1	My organization/own business actively carries out its work on improving the existing product.	(Calik et al., 2017)
	Inno_2	My organization/own business sees innovation as a critical tool.	
	Inno_3	My organization/own business increases the frequency of introduction of innovative products/services.	(Ouakouak & Ouedraogo, 2017)
	Inno_4	The new products/services introduced by my organization/own business are enthusiastically welcomed by customers	
Creativity	Crea_1	I suggest new ways to increase quality	(Zhang & Bartol, 2010)
	Crea_2	I am a good source of creative ideas	
	Crea_3	I promote and champion ideas to others.	
	Crea_4	I often have new and innovative ideas	
	Crea_5	I come up with creative solutions to problems	
AI Competence	Aico_1	I can skilfully use an AI program to help me with my regular work	(Wang et al., 2023)
	Aico_2	It is usually easy for me to learn how to use a new AI program	
	Aico_3	I can use an AI program to improve my work efficiency	
	Aico_4	I didn't encounter any difficulty when using the AI program	Self-developed

Source: Author (2025)

Result and Discussion

Results

From the surveys conducted in December 2024, 268 completed questionnaires had been collected from people who met the criteria. The demographic overview of the samples is shown in the following table. It is important to note that this is an exploratory study employing a convenience sampling method. Thus, the researchers did not set a rigid requirement regarding the representation of each industrial sector. Nevertheless, researchers tried to make sure that all creative industrial sectors would be represented in the

surveys. Table 2 showed that people from the broadcasting and culinary industries dominate the demographic of the respondents, with the percentages of 41% and 26,5% respectively. In addition, the respondents are comprised of 57,1% males and 42,9% females. Furthermore, 62,4% of the respondents have an age range between 18 and 30.

Table 2. Sample Demographic

Profile		Frequency	Percentage
Industrial Sector			
Architecture, Interior Design		7	2,6%
Fashion, Beauty		19	7,1%
Graphic Design, Illustration		10	3,7%
Photography		12	4,5%
Craft		6	2,2%
Culinary, FnB		71	26,5%
Music		3	1,1%
Broadcasting, TV, Radio		110	41,0%
Advertising		5	1,9%
Literary, Fiction, Publishing		4	1,5%
Performing Arts, Drama, Dance		3	1,1%
Fine Art		1	0,4%
Software, Game Development		4	1,5%
Video, Movie, Animation		13	4,9%
	TOTAL	268	100,0%
Gender			
Female		115	42,9%
Male		153	57,1%
	TOTAL	268	100,0%
Age			
18 – 25		87	32,5%
26 – 30		80	29,9%
31 – 35		30	11,2%
36 – 40		26	9,7%
41 – 50		35	13,1%
$\geq$ 51		10	3,7%
	TOTAL	268	100,0%
Job Position			
Executive/Manager		8	3,0%
Head of Staff/Division		21	7,8%

Staff		159	59,3%
Freelancer		33	12,3%
Owner/Entrepreneur		47	17,5%
	TOTAL	268	100,0%

Source: Author 2025

First, it is necessary to carry out several tests on the developed instruments in order to ensure that the instruments are valid and reliable. Validity tests are carried out by evaluating the factor loading and Average Variance Extracted (AVE) scores. An item with a factor loading score higher than 0.6 is regarded as a valid item. While a construct with an AVE score higher than 0.5 will be regarded as a valid construct. In addition, reliability tests are conducted by evaluating Cronbach's Alpha and Composite Reliability scores. A construct possessing Cronbach's Alpha and Composite Reliability scores higher than 0.7, respectively, will be regarded as a reliable construct.

According to the table below, all items have a factor loading score higher than 0.6. Moreover, all constructs have an AVE score bigger than the acceptable threshold of 0.5. Therefore, it is concluded that all instruments are valid. In addition, all constructs have Cronbach's α and Composite Reliability scores higher than 0.7, respectively. Thus, it can be concluded that this set of instruments is reliable.

Table 3. Validity and Reliability Tests

Construct	Code	Factor Loading	AVE	Cronbach's α	Composite Reliability
Innovation	Inno_1	0.805	0.519	0.732	0.811
	Inno_2	0.670			
	Inno_3	0.633			
	Inno_4	0.761			
Creativity	Crea_1	0.811	0.632	0.855	0.895
	Crea_2	0.825			
	Crea_3	0.820			
	Crea_4	0.786			
	Crea_5	0.730			
AI Competence	Aico_1	0.860	0.724	0.873	0.913
	Aico_2	0.853			
	Aico_3	0.864			
	Aico_4	0.826			

Source: Author (2025)

A discriminant validity test is conducted to evaluate the extent to which a construct is statistically distinct from other constructs. (Fornell & Larcker, 1981). The discriminant validity can be evaluated by using the table of HTMT Ratios. Heterotrait-Monotrait (HTMT) ratio specifically can be defined as the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for the items measuring the same construct. (Hair et al., 2019). The HTMT ratio of each correlation should not be higher than 0.9 to indicate that the true correlations among constructs are different from each other. The following table shows that all the HTMT ratios are less than 0.9, showing that all constructs have an acceptable level of discriminant validity.

Table 4. HTMT Ratio

Construct	AI Competence	Creativity	Innovation
AI Competence			
Creativity	0.539		
Innovation	0.472	0.461	

Source: Author (2025)

Partial Least Squares Structural Equation Model (PLS-SEM) is used to examine proposed hypotheses. A hypothesis will be accepted if the t-statistic value is higher than 1.960 and the p-value is less than 0.05. According to the results shown in the table below, it is concluded that the competence in artificial intelligence has a significantly positive impact on innovation. The table shows that this relationship has a t-statistic value of 4.242, which is higher than 1.960, a p-value score of 0.000, which is less than 0.05, and a positive regression coefficient score of 0.247. Moreover, it is confirmed that individual creativity significantly moderates the relationship between AI competence and innovation since this relationship has a t-statistic value of 2.009, which is slightly bigger than 1.960, and a p-value of 0.045, which is less than the acceptable threshold of 0.05. Intriguingly, the moderating role of individual creativity in this relationship goes in the negative direction due to a negative regression coefficient score of -0.150.

Table 5. Hypothesis Tests

Hypothesis	Coefficient	t-statistics	p-value
AI Competence –> Innovation	0.247	4.242	0.000
Creativity*AI Competence -> Innovation	-0.150	2.009	0.045

Source: Author (2025)

Discussion

The Impact of AI Competence on Innovation

The study's results suggest that AI competence has a positive effect on innovation, which proves that the first hypothesis is acceptable. This finding is in accordance with some previous studies. Previously, scholars suggested that AI can perform decision-making processes more quickly and accurately, which is beneficial for the innovation of new products or services. In addition, AI can collaborate with humans in generating novel ideas and exploring innovative solutions. (Corvello, 2025). This finding is also supported

by another study, indicating that both AI competencies and design thinking skills significantly improve the innovation capability of entrepreneurs (Imjai et al., 2024). Another research also implies that AI has significant potential to foster innovation processes, which is in line with this finding (Sedkaoui & Benaichouba, 2024).

In the context of creative industries, this result seems to be understandable since recent AI programs can collaborate with humans in the creative process, which eventually results in innovation. AI technology can help humans to speed up the creative process, and it has the capacity to provide accurate and on-time feedback on human creativity, despite its inability to be independently creative, as AI depends on the input provided by humans (Marrone et al., 2024). By utilizing AI skillfully, creative workers may generate valuable raw ideas to be developed further by themselves in order to generate innovativeness within their own works or creative products.

The Moderating Effect of Creativity in The Relationship Between AI Competence and Innovation

Moreover, the result suggests that individual creativity significantly moderates the relationship between AI competence and innovation, which aligns with the second hypothesis. Intriguingly, the moderating effect of creativity in the relationship between AI competence and innovation goes in the negative direction. This means that the stronger the level of creativity, the weaker the impact of AI competence on innovation. In other words, it can be said that in this study, individual creativity and AI competence have an inverse relationship.

A previous study suggests that creativity allows people to adapt better to new things like AI (Richard et al., 2018), and thus, it could be assumed that creativity enables adaptability to AI, and then adaptability to AI enables competence. However, in this study, the role of creativity in enhancing AI competence on innovation is unobservable. This result is deemed understandable since the research subjects are people who work in creative industries. It is normal for them to have a sufficient level of creative skills, enabling them to heavily rely on their own creativity. Specifically for this research, researchers argue that a person who possesses a greater level of creative skills will rely more dominantly on his/her own creativity in creating works or products, and thus, weaken the role of his/her competence in using AI. However, researchers agree that this kind of finding and conclusion needs to be studied further in other research.

Conclusion

This research aims to investigate the relationship between AI competence and innovation in the context of Indonesian creative industries, and the moderating role of creativity in such relationship. Researchers try to accomplish the objective by conducting surveys and analyzing the data using a quantitative approach. The results of hypothesis testing using PLS-SEM indicate that AI competence has a significantly positive impact on innovation. While individual creativity moderates the relationship between AI competence and innovation. Intriguingly, this moderate effect goes in the negative direction.

As a theoretical implication, once again, this research has proven that technological advances are beneficial for innovation. In addition, this research underlines that the impact of creativity on competence, especially in using new technology, needs to be investigated further since this relationship remains understudied despite its importance. As a practical implication, it is recommended that the creative industries stakeholders should provide sufficient training for creative workers, allowing them to develop their competence in using AI programs related to their job or tasks, as well as to teach them the most effective way to leverage these kinds of tools to generate innovation.

There is a major limitation in this research. Due to the nature of this research as an exploratory study and the limitedness of resources, the data were collected by using a non-probability sampling method, specifically convenience sampling. Consequently, the results cannot be generalized to the entire population.

Therefore, further studies employing a rigorous probability sampling method are needed in order to get more conclusive and definitive results.

Author's Contribution

Prof. Aoyama has contributed to giving many valuable advice for the selection of constructs and the design of the research framework and methodology. Pranandari has contributed to manuscript writing, data collection, as well as data analysis and interpretation.

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Declaration of Competing Interest

The authors declare that they have no competing interests

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