

ARTIFICIAL INTELLIGENCE DEVELOPMENT AS A BASIS FOR CREATIVE ECONOMIC GROWTH AND RECOVERY OF INDONESIA'S NATIONAL ECONOMY

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Abstract

The times have given birth to many new technologies, one of which is artificial intelligence. Of course, this technology must be utilized and adapted, because otherwise, it will make Indonesia lagging. Plus now the world seems to be controlled by digital, everything will be related to digital, including the economic sector. Indonesia is a developing country with an overall medium-scale economic growth rate. There are still many records for the economic sector, including the creative economy sector. Especially after being faced with the COVID-19 pandemic, the economy has become disrupted and has forced the government to prepare new strategies to recover the national economy (PEN). Links between AI, the creative economy and national economic recovery are analyzed using qualitative methods, that the creative economy using AI accelerates national economic recovery.

Keywords: *Artificial Intelligence, Creative Economy, PEN*

INTRODUCTION

The economy is one of the key aspects that support the sustainability of a country. When economic conditions run out of control, an entire system is eventually established. Just like the 1998 monetary crisis that successfully brought conditions to Indonesia to ruin. The resulting turmoil brought national stability to a lower level for some things, among which there were protests in various places, looters and increasing racism, resulting in heavy loss of life, and the fall of new order that caused President Soeharto to resign from a post of 32 years. This could certainly prove how important the economy is to a country, since even the slightest stunted could have a profound impact.

The Indonesian government has always tried to boost the country's economy, one by promoting its creative economic sector. The creative economic sector is expected to provide for the country's economy, as it is not limited to job availability. In addition, Indonesia has had to cope with the covid-19 pandemic that is making Indonesia's economic situation even

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more difficult. As a result of the human pandemic, there was no such activity that it indirectly brought down productivity in carrying out its work. The decline in productivity results directly from the company, and if the company is not strong enough to survive, then it reverses to bankruptcy. Unfortunately, many companies in Indonesia are unable to cope with the covid-19 pandemic because of business cycles that are unable to function normally and cause only damage. In order to stop the losses, the company would cut its expenses, one by cutting work to its employees. The company's move will no doubt result in even more economic growth, since it results in the arrival of Indonesia's unemployment rate.

Faced with the covid-19 pandemic, the world must presently be ready to adapt to changes that are occurring, and Indonesia should be no exception. Such changes have led to great progress in some areas, such as technology and digital. Advances in technology and digital are not only making it easier to interact but also making it easier to create and innovate. The rapid expansion of technology and digital technologies is creating new technologies such as artificial intelligence. Artificial intelligence brings various benefits to work because it has been designed to resemble the human brain. Thus, the writing is designed to determine how artificial intelligence development can provide both the creative economic growth and the current restoration of Indonesia's national economy. It is hoped that the writing of this creative sector can continue to create and innovate by leveraging intellectual property such as artificial intelligence so that the creative economic sector can continue to grow and expand as expected.

RESEARCH METHOD

The study is qualitative, according to Sugiono (2019) as applied research applied artificial intelligence in the creative economy for national economic recovery. The data collection, in turn, takes some data from the official statistics center agency page, and the associated ministry, and is supported by data from other sources. Inductive data analysis based on facts found, acquired meaning and then described.

RESULTS AND DISCUSSIONS

Artificial Intelligence

Artificial Intelligence is a technology designed to simulate human intelligence using machines, particularly computer programming. AI was created with the principle that human intelligence can be defined so that machines can imitate and perform their duties from simple

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to complex, with the purpose of learning, reasoning and perception. Quoted from the book AI for beginner (2018), John McCarthy, as the first person to introduce and propose the term artificial intelligence, defined AI as follows:

“The objective of artificial intelligence is to create robots that act intelligently.” It is the science of creating intelligent machines, particularly insightful computer programs. It's akin to the problem of utilizing computers to study human intellect, but AI doesn't have to be limited to physiologically observable ways.”

Defines artificial intelligence as an attempt to model human intelligence and design machines in such a way as to imitate human behavior in the performance of its duties, except that of a biological nature.

AI is divided into 2 (two) categories, namely Weak AI (weak/narrow AI) and Strong AI (strong/general AI). Weak or narrow AI is AI designed to perform specific tasks, for example Apple Siri on Apple products. While strong or general AI is an AI that has general human cognitive abilities, so that when a specific task is presented, a strong or general AI can carry out the command without human assistance. Furthermore, AI is also divided into 4 (four) types, namely Reactive Machines (reactive machines), Limited Memory (limited memory), Theory of Mind (theory of mind), and Self-Awareness (self-awareness). Reactive machines are a type of AI that uses the oldest concepts and works by imitating the human ability to respond to stimuli. Meanwhile, limited memory is the result of the development of reactive machine-type AI that has memory to store historical data. Furthermore, this type of theory of mind, this type of AI better understands the needs, emotions, beliefs and thought processes of something that interacts with AI. And lastly, the type of self-awareness that is able to make emotions, needs, beliefs and potentials according to their own desires.

Artificial intelligence is still developing, but its use has been felt in many fields both economic, political, and even educational. Virtual assistive features like Siri on iOS based systems, Google now on Android based systems, and Cortana on Windows based systems are small forms of artificial intelligence applications in everyday life. In addition, the recommendation features available in music services or online film streaming also include forms of artificial intelligence application. With these applications it can recognize the preferred song or film preference by either song or preselected film.

Creative Economy

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The creative economy is an economic sector that prioritizes creativity and innovation as its main production factors. According to the Indonesian Book of Economics and Business (2020), the creative economy is a process of creation to distribution that is based on creativity and intellectuality. Meanwhile, John Howkins in the book *The Creative Economy: How People Make Money From Ideas* (2001), states creative economy as "value creation as a result of an idea". In other words, the Creative Economy produces output in the form of ideas or ideas.

In this sector, creativity is also needed in the use of raw materials and technological innovation. Due to its relatively broad scope, the creative economy sector is one of the government's hopes to increase national economic growth. The creative economy sector in Indonesia has been promoted since 2010, and under the leadership of President Joko Widodo, a Creative Economy Agency (Bekraf) was formed referring to Presidential Decree 6/2015, in which the agency has the main task and function to develop and advance the creative economy sector. Indonesia.

Reporting from the website of the Ministry of Tourism and Creative Economy of the Republic of Indonesia, currently this sector has at least 17 (seventeen) sub-sectors consisting of:

1. Game Developer, is a sub-sector of Creative Economy that is able to develop and enter the world of education;
2. Architecture, which is a sub-sector of the creative economy that shows the character of the nation's culture and urban development;
3. Interior Design, is a sub-sector of the creative economy which has made significant progress in the last 2 (two) years due to the increasing public appreciation of interior design;
4. Music, is one of the creative sub-sectors with great potential to continue to grow due to the high enthusiasm of the community towards music;
5. Fine Arts, is a sub-sector of the creative economy that has the potential to develop because Indonesia has great potential, both in terms of quality, quantity, creative actors, productivity and market;
6. Product Design, is a sub-sector of the creative economy that combines elements of function and aesthetics;
7. Fashion, is a dynamic sub-sector of the creative economy due to changing trends;

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8. Culinary, which is a sub-sector of the creative economy that supports tourism revenues and Indonesia's creative economy;
9. Film, Animation, and Video, are creative sub-sectors that have the potential to develop if supported by sound policies;
10. Photography, is a sub-sector of the creative economy that has the potential to develop along with the development of social media;
11. Visual Communication Design, is a creative sub-sector that plays a role in business growth and government programs;
12. Television and Radio, which are the sub-sectors of the creative economy that contribute significantly to Indonesia's GDP and labor utilization;
13. Crafts, which is a sub-sector of the creative economy which is closely related to the tourism industry and the creative economy;
14. Advertising, is a sub-sector of the creative economy with a high spreadability;
15. Performing Arts, is one of the diverse sub-sectors of the creative economy and has received international recognition and appreciation;
16. Publishing, is a sub-sector of the creative economy which enriches the intellectual property of the country;
17. Applications are one of the creative sub-sectors that have great potential to develop because the application development industry has experienced an increase.

National Economy Recovery

Reported from the website of the Ministry of Finance of the Republic of Indonesia, the National Economic Recovery (PEN) is a series of activities carried out to respond to the decline in community productivity and reduce the impact of the pandemic on the economy, which is based on PP 23/2020. PEN aims to improve, and maintain the ability of business actors in the midst of a pandemic.

National Economic Recovery is funded from various sources, including APBN, PMN, fund placement, and guarantees. In order to achieve the goal of PEN, the government provides business support to economic actors by providing tax incentives to MSMEs amounting to Rp. 28.06 trillion for the imposition of income tax article 21 DTP, and final income tax for MSMEs DTP, interest subsidies for MSMEs of Rp. 34.15 trillion, and guarantees. new working capital loans for MSMEs amounting to Rp6 trillion. Not only MSME players, corporations also get business support in the form of providing tax incentives

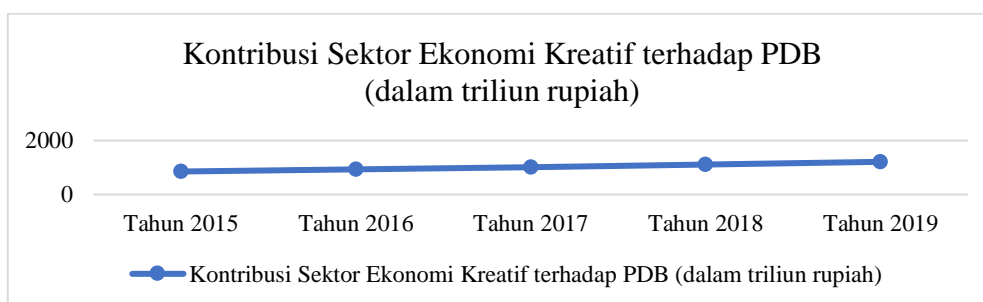
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of Rp. 34.95 trillion by exempting corporations from the imposition of article 22 income tax, reducing income tax installments of article 25, and pre-refunding value added tax. Furthermore, to support corporations, the government places funds in banks for restructuring MSME debts amounting to Rp35 trillion. In addition, the government also provides business support to SOEs in the form of PMN, compensation, bailouts (investment) for working capital, optimization of BMN, settlement of bills, loss limit guarantees, dividend delays, government guarantees, and payment of bailouts for national strategic projects.

Artificial Intelligence as Supporting Creative Economy Growth

Currently, the creative economy sector is expected to be able to support the Indonesian economy in the future. This is not only because the creative economy has a very broad scope of sub-sectors, but also has an unlimited brain. This unlimited brain arises because the creative economy sector has creative and creative actors who come from various circles. The more diverse the people, the more ideas, ideas, creativity and innovations that appear.

Reporting from a Kemenparekraf article related to Indonesia, which succeeded in being the initiator of the international year of world creatives, it is known that based on data from the Creative Economy OPUS 2020 the creative economy sector was able to contribute Rp. in 2018 which amounted to Rp1,105 trillion, and in 2017 which was only Rp1,009 trillion. This achievement has succeeded in making Indonesia the third country in which the creative economy sector contributes greatly to GDP. In seeking the growth of the creative economy sector, of course there are sub-sectors that are the focus of development. Of the 17 (seventeen) sub-sectors, development is focused on the leading sub-sectors (contributing to GDP) consisting of the craft, culinary, and fashion sub-sectors, as well as priority sub-sectors (supporting other economic sub-sectors) consisting of sub-sectors of film, animation and video, music, and application and game development.



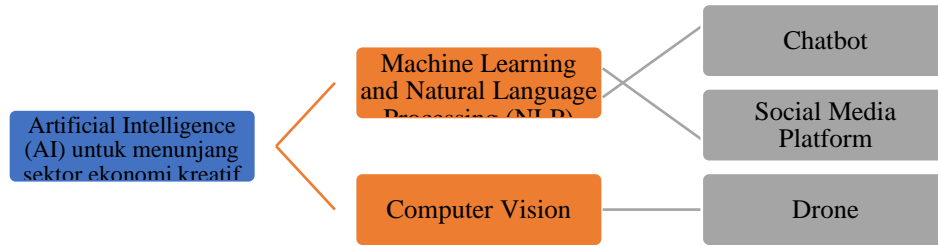
Picture 1 The Creative Economy Sector Contribution for GDP

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In seeking a better economic and creative sector growth, both the government and creative economy actors must think about what strategies to do, one of the strategies is to increase marketing by actively promoting. Promotions are carried out to provide product-related information and reach new consumers. There are several types of promotions, physical promotions such as exhibitions or bazaars, promotions through traditional media such as print media, billboards, and television, then promotions can also be done using digital media such as social media, or websites. Now is a digital era where people will tend to rely on and take advantage of existing technology. Promotions through digital media will generally be used because they are able to reach a wider range of consumers, due to the increasingly massive use of social media. The development of digital media is certainly positively correlated with the development of AI or artificial intelligence, because based on data from the Digital Economy Summit in 2020, Indonesia's digital economy is estimated to increase 3 (three) times from only 40 billion USD in 2019 to 130 billion USD in 2025, although to date AI has not been fully adopted in the economic sector.

If in the industrial sector AI is considered to be able to replace workers, then in the creative economy sector AI can strengthen its human resources. How not, artificial intelligence has succeeded in creating a chatbot that can serve customers in two directions and can meet customer demands for customer service that is available 24 hours. In addition, social media that is often used is one of the technologies that AI has successfully created. Today, social media has a tremendous impact. To produce a product, you only need to take a photo and upload it to social media, after which the product will be visible to many people. The wider the reach, the more open the opportunity to get new consumers. AI's link with 17 (seventeen) creative economy sub-sectors is not only limited to promotion, the development of the creative economy sub-sector will also be attached to existing artificial intelligence, game and application development sub-sectors, for example. Reporting from AI writing in Video Games (2020), it is known that game developers need machine learning technology in AI to find out the preferences of their players and then redevelop their games based on existing data. In addition, the AI function is also often used in controlling NPCs (Non-Player Characters) in a game.

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Picture 2 AI That can be used to support creative economy growth

Artificial Intelligence in National Economic Recovery Efforts

Based on data from the Central Statistics Agency of the Republic of Indonesia (2021), it is known that in the second quarter of 2021 the economic growth rate managed to reach 7.07% (yoy) although in the first quarter it experienced -0.71% (yoy). This certainly can illustrate if the direction and strategy of economic recovery is right. According to the Minister of Finance in an article related to the rate of economic growth, this positive achievement was also supported by government intervention policies, both in terms of demand and supply, which made all sectors active to support growth.

Table 1 Economic Growth Rate in 2021

GDP Growth Rate by Expenditure (Percent) in 2021						
GDP Usage	Cumulative Growth Rate (c-to-c)		Chained Quarterly Growth Rate (q-to-q)		Quarterly Growth Rate against the Same Quarter of Previous Year (y-on-y)	
	Quarterly I	Quarterly II	Quarterly I	Quarterly II	Quarterly I	Triwulan II
Gross Domestic Product	-0.71	3.10	-0.92	3.31	-0.71	7.07

Resource: The data is processed from data from the Central Statistics Agency

In order to maintain the rate of economic growth, the government as a policy maker needs to look at valid data so that there are no wrong steps in determining the policies to be taken. For example, the government through the Ministry of National Development Planning/Bappenas in 2020 collaborated with the ITB AI Center to now cast people's purchasing power. The use of AI technology is expected to be able to help the government to determine appropriate policies so that the country's economic conditions can improve. In addition, BPS as the agency that provides statistical data has also analyzed big data from the

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marketplace to find out how the conditions of online sales are. The analysis is based on data from website crawling from the marketplace. Meanwhile, it can be seen that there is still a lot of confusion in the product category because the seller puts the product wrong. Therefore, it is necessary to adapt AI to minimize errors that will occur, by means of which sellers can use machine learning to sort products according to their categories.

CONCLUSIONS AND ADVICES

Conclusions

Artificial intelligence turns out to have a positive impact on the growth of the creative economy and the recovery of the national economy. AI can encourage sales of creative economy sub-sector products to reach a wider market. AI also makes it easy for creative economy sector actors to continue to create and innovate, which can indirectly increase the productivity of the actors. If AI has a negative impact with the replacement of human labor by robots in the industrial sector, perhaps the affected workforce can switch to the creative economy sector and start adapting to AI as one of the solutions. In addition to earning income, these affected workers will later contribute to the growth of the national creative economy. Similar to the creative economy, the recovery of the national economy has also been helped by the artificial intelligence being developed. Thanks to the technology produced by artificial intelligence, the government can find out how the current economic condition is, and determine what steps should be taken appropriately. Neither the Coordinating Minister for the Economy, nor the Minister of Tourism and Creative Economy of the Republic of Indonesia agree that artificial intelligence helps the Indonesian economy.

Advices

Seeing the huge opportunities for the creative economy sector in the future, further research and development is needed that can focus on the in-depth use of artificial intelligence in the creative economy sector. This will certainly be very useful for both the government and the creative economy sub-sector actors to increase the added value of their creative products or services. In addition, in terms of artificial intelligence, it is necessary to continue to develop it so that it is more useful not only for the economic sector, but also for other sectors.

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