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The Strategy of Develop Artificial Intelligence in Singapore, United States, and United Kingdom

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Abstract: The development of artificial intelligence has become an important issue in this era. However, the development of artificial intelligence is growing evenly, especially in Asian continents. A lot of countries develop artificial intelligence because artificial intelligence provides a lot of benefits. Hence, the Government makes various strategies to develop artificial intelligence in their country. Almost the country utilizes three sectors, such as the education sector, private sector, and the government sector, to develop artificial intelligence. Nevertheless, there are different approaches to develop artificial intelligence. Singapore prefers to utilize government sectors than the education sectors and private sectors. Then, the UK prefers to utilize education sectors than private sectors and government sectors. Different from Singapore and the UK, the USA prefers to utilize two sectors, which are very significant support by the education sectors and private sectors.

1. Introduction

Since Walter Pitts and Warren McCulloch published the first research on Artificial Intelligence in 1943, artificial intelligence has received much attention to developed [2]. The benefits of artificial intelligence that provide become the reason various countries did research and implement artificial intelligence [3]. Hence, the development of artificial intelligence is growing rapidly in several countries, especially on American continents, European continents, and Asia continents. However, the development of artificial intelligence in American continents and European continents grow up very different compared to the development of artificial intelligence in Asia continents.



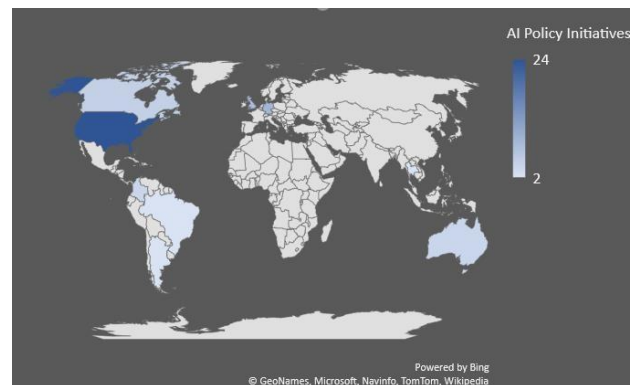


Figure 1. The Initiatives Development of Artificial Intelligence on Research and Application

Figure 1 shows that the development initiative of artificial intelligence from some countries has different colors. The meaning of the colors is showing that country has more initiative about developing the Artificial Intelligence system. The United States, United Kingdom, China, and Singapore are the most initiative countries to develop artificial intelligence on their continents. Since the early '90s, they have already concerned about the development of artificial intelligence to implement in their aspects [3]. Different from the development of artificial intelligence in American continents and European continents, the development of artificial intelligence in ASIA continent comparatively isn't growing evenly [4].

Figure 1 shows the development of artificial intelligence on ASIAN continent growing slower than other continents. The country characteristic becomes the problem of ASIAN country development of artificial intelligence is growth evenly [5]. Although, Singapore is the first rank as the country develops initiative artificial intelligence. It's undeniable that developments of artificial intelligence in ASIA continents are dominated by East Asia, such as Cina, Jepang, and South Korea. A few countries in ASEAN have more concern about developing artificial intelligence. Besides the country characteristic, the right strategy of the country also becomes an important action that causes the development of artificial intelligence in ASEAN comparatively isn't significant.

2. Research Method

This research article aims to explore the strategy and initiative development of artificial intelligence on the American continents, European continents, and Asia continents. The process flows the phases of the data selection process and the tools used to search, screen, and choose strategy artificial intelligence for synthesis inclusion. Although several publications discuss the general development of artificial intelligence, this analysis focuses only on the strategy development of artificial intelligence being investigated. Since the documents are not free-access, we utilized the Scopus search engine and extracted the articles using Sci Hub. The researchers performed document searches using the Scopus search engine, with the strategy of the countries to develop artificial intelligence being the source title.

3. Basic Theory

3.1 The policy of Artificial Intelligence

In the 21st century, artificial intelligence becomes the system that develops in all fields such as engineering, science, education, medicine, business, accounting, finance, marketing, economics, stock market and law, and governmental [1]. Especially in the government context, the development of artificial intelligence gets a positive response [6]. The benefits of Artificial intelligence that gives opportunities to the Government to reduce administrative burdens, help resolve resource allocation problems, and take on significantly complex tasks become the reason [7]. Although, the implementation of artificial intelligence has a new challenge to Government toward human resources [8]. The Government should be ensuring created, implemented, and controlled artificial intelligence in a responsible and broadly beneficial manner [9].

Thus, artificial intelligence is not a new system implementation in the Governmental sector [36]. The most application of artificial intelligence that prevalent has been implemented in Governmental are defense and intelligence [15]. It is because artificial intelligence within large systems can protect data safety [3]. The purposes of artificial intelligence are changing in the current period compared with the late 1990s.

Therefore, establishing a policy concept through legal regulation becomes an important action of the Government to secure the negative impact that arises from the use of artificial intelligence [17]. Artificial intelligence is possible to complete fairly complex jobs as well [19]. Therefore, establishing a policy about manage artificial intelligence can protect the negative impact of the rapid development of artificial intelligence. Artificial Intelligence should not be implemented in Government simply because it is a new exciting technology [20]. Hence, public officials should be prepared to solve the problems impacting their jobs, and artificial intelligence should be provided as a toolkit to resolve the issue [21]. Therefore, governments should start adopting artificial intelligence by learning from recent policy development efforts and deployment of Artificial intelligence in the private sector [22].

4. Result and Discussion

4.1 The Comparative Initiative Development Strategy of Artificial Intelligence on United States of America, United Kingdom, and Singapore

Three countries are the countries that have initiated the development of artificial intelligence on the continent. The right strategy of the three countries to develop artificial intelligence becomes an important policy. Although, there are different approaches to develop artificial intelligence, Singapore becomes the first country which has a high development initiative value on artificial intelligence. The United States of America becomes the second dominant country from the American continent that has an initiative to develop research and application of artificial intelligence. Then, The United Kingdom becomes the third country, which has a high development initiative value. The right strategy of three countries becomes the key success of artificial intelligence grows rapidly in their countries.

The initiative most of development countries utilize three sectors to develop artificial intelligence. Three sectors are education sectors, private sectors, and government sectors. They are just different concerns on three sectors to develop

artificial intelligence. The three sectors support each other in the development of artificial intelligence in three countries. However, there are different concerns between the US, UK, and Singapore to develop artificial intelligence.

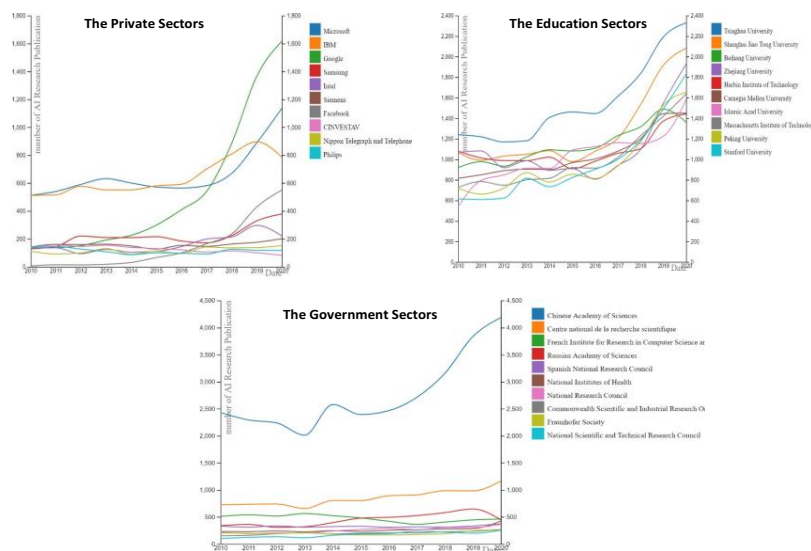


Figure 2. The Comparison of Private Sectors on Development Initiative of Artificial Intelligence in Singapore

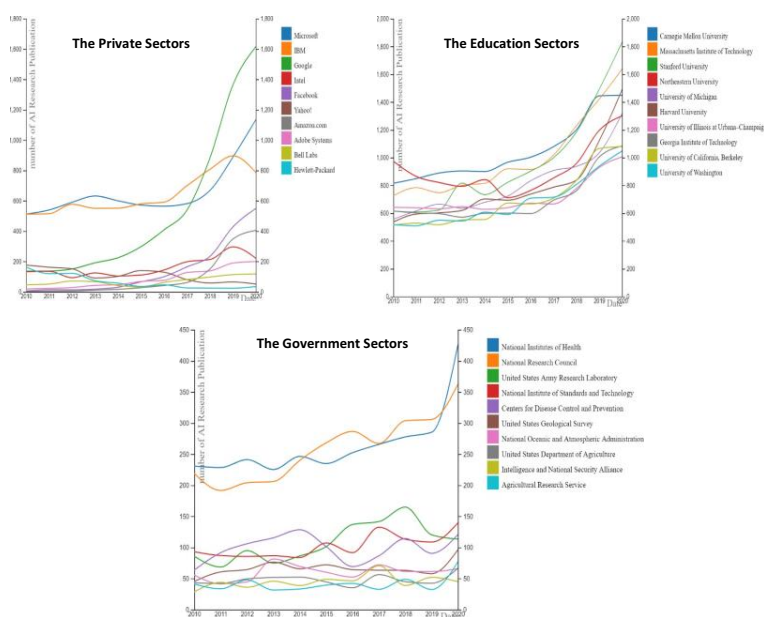


Figure 3. The Comparison of Private Sectors and Education Sectors on Development Initiative of Artificial Intelligence in the United Kingdom

The initiative development strategy artificial intelligence of Singapore that more concern utilizes government sectors is very effective to increase the development of artificial intelligence. The main concern of Singapore brings together

existing programs into a single coherent framework [23]. The government sectors of Singapore are very consistent supporting to development of artificial intelligence during the last ten years. Figure 1 shows that Government sectors are very supporting the development of artificial intelligence in Singapore with an average above 4000 publication. The role of Government sectors has become the most initiative to develop artificial intelligence in Singapore. The vision of Singapore that leveraging artificial intelligence to increase National competitiveness becomes the reason Government Singapore sectors are very concerned about developing Artificial Intelligence [24]. The strategy of Singapore that created the National AI office, which is part of Singapore's Smart Nation Office success, create Singapore as the most country initiative to develop artificial intelligence [25].

Different from Singapore, the role of education sectors has an important role in the development of artificial intelligence in the United Kingdom compared to Government sectors. The education sectors of the UK produce a lot of publications about artificial intelligence. Figure 3 shown the role of education sectors of the UK is a very significant effect on developing an artificial intelligence system than private sectors. In the last ten years, the education sectors of the UK contribute 1,400 research initiatives to develop the artificial intelligence system. It is very different compared to private sectors that produce 59 research initiatives about artificial intelligence. The University of Oxford has become the most university that has research initiative to develop Artificial Intelligence in the UK. Hence, the education sectors of the United Kingdom were making substantial practical contributions to the development of artificial intelligence in various aspects [24].

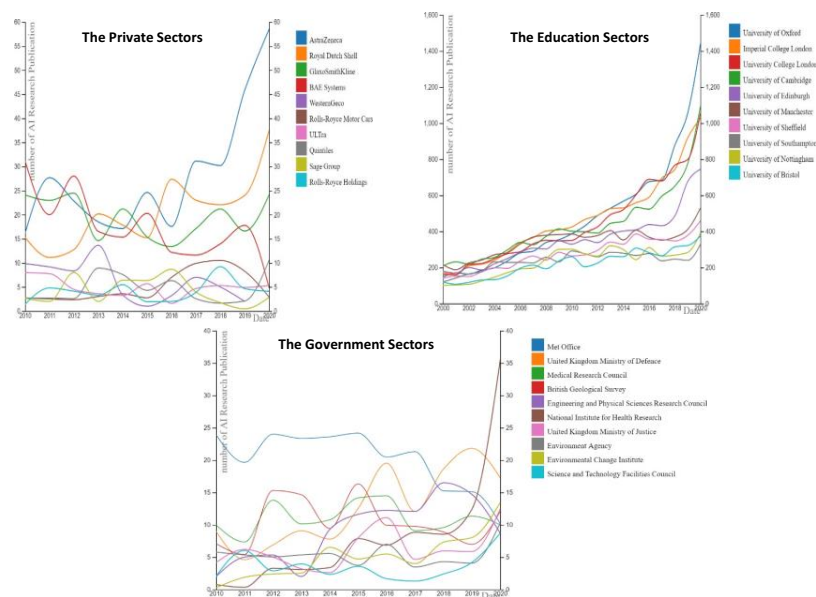


Figure 4. The Comparison of Private, Education, Government Sectors on Development Initiative of Artificial Intelligence in United States of America

Different from the private sectors of the United Kingdom, the role of private sectors in the United States plays a different role in developing artificial intelligence. The role of the private sector also has a big contribution to develop artificial intelligence in the United States. It is because the United States Government involves the private sector to do research and develop the system of Artificial Intelligence

through the policy to encourage the private sector to invest in developing artificial intelligence [26]. On US cases, the White House Office of Science and Technology Policy (OSTP) was prepared the plan of the Future of Artificial Intelligence as the future concept policy on the technology of the U.S [26]. However, The United States maintains innovative artificial intelligence just based on advantages such as reduce administrative burdens, help resolve resource allocation problems, and take on significantly complex tasks [7].

5. Conclusion

Singapore becomes the first country which has a high development initiative value on artificial intelligence. The United States of America becomes the second dominant country from the American continent that has an initiative to develop research and application of artificial intelligence. Then, The United Kingdom becomes the third country, which has a high development initiative value.

However, there is a different approach in developing artificial intelligence. Almost countries utilize three sectors to develop artificial intelligence, such as the education sector, private sector, and government sector. Nevertheless, the strategy of the countries that utilize three sectors has each concern. The strategy of Singapore to develop artificial intelligence is more significant to utilize government sectors than education and private sectors. Then, the UK Government is more significant to utilize education sectors than the government and private sectors. Different from the UK and Singapore, the United States of America utilizes both sectors, such as private sectors and education sectors. However, the private sectors in the USA and Singapore comparatively significant support develop artificial intelligence compare to UK private sectors.

6. References

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