

COMPLETION REPORT

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Subject of Research Project: **Japan's Digital Economy, Labor Market and Policy Options**

Japan's third-party market and exchange rate will affect economic growth rate. In 2022, the Japanese labor market show the characteristics of shock and recovery, but the recovery of various industries is heterogeneous. The logic of Japan's labor market is to control fluctuations in the complete unemployment rate and thereby control fluctuations in the economic growth rate. In addition to affecting the economic growth rate, the development of the digital economy will also affect the labor market.

Against the backdrop of the digital economy, digitization technologies such as artificial intelligence (AI), big data, and the Internet of Things (IoT) have been seamlessly integrated into economic and social life, driving continuous productivity growth and breakthroughs. AI is a cutting-edge technology that involves a complex system supported by products such as data production, algorithm and software development, chips, memory, and other hardware devices. The COVID-19-induced shift towards non-contact and non-face-to-face interactions has facilitated Japan's rapid development of ICT in areas such as remote learning, online learning, and telemedicine, in which AI plays a pivotal role. For instance, Japanese private enterprises have swiftly embraced remote work in the face of the COVID-19 outbreak. As the digital economy continues to merge with economic and social life, countries worldwide are increasingly focusing their attention on the impact of digital technologies such as artificial intelligence (AI) on labor. Studies suggest that within the next 10-20 years, 47% of American workers may face a high risk of being replaced by technology, while the average proportion of high-risk occupations replaced by technology among the 21 OECD countries is 9%. This development has raised significant concerns across academic and political spheres. Against this backdrop, Japan has outlined plans for promoting the digital economy and creating a Super Smart Society 5.0. In its "AI Strategy 2022", the Japanese government highlights the importance of leveraging AI development to resolve social issues and enhance industrial competitiveness. While acknowledging the potential benefits of AI, it is also crucial to recognize its potential negative impact.

Japan's digital economic development plan, which highlights the role of artificial intelligence (AI), aims to counteract the negative consequences of an aging population and increase industrial productivity. To shed light on the impact of AI development in Japan's labor market, this paper presents a novel empirical investigation utilizing panel datasets from almost 100 industries spanning the period between 1994 and 2018. Our analysis reveals a heterogeneous effect of AI development on the labor market in Japan. In the manufacturing sector, AI leads to wage hikes, an increase in demand for highly-skilled labor, and also job creation. However, non-manufacturing sectors tend to replace low-skilled workers using AI. While AI development can mitigate the adverse influence of an aging workforce on the labor market to some extent, it can also exacerbate the widening income

gap and wealth inequality among workers. Our study provides new and valuable insights that are beneficial for policymakers, employers, and society at large.

policymakers must consider these potential negative impacts and implement measures to promote inclusive growth, such as investing in human capital through vocational education and training programs and instituting comprehensive social safety nets. Overall, our research provides new insights into the impact of AI development on Japan's labor market, which could have far-reaching implications in the country's ongoing efforts to address the economic and social challenges posed by an aging population.

Publication of the Results of Research Project:

Verbal Presentation (Date, Venue, Name of Conference, Title of Presentation, Presenter, etc.)

3rd June 2023. Xu Yuelei. The 4th International Symposium on Regional Integration and Financial Development, and Promotion Event for *Digital Economy and Sustainable Development, Artificial Intelligence and the Labor Market in the Context of the Digital Economy: evidence from Japan*.

25th September 2022, Yuelei Xu, National Society of Japanese Economics Annual Meeting, Development of *Digital Economy and Labor Market in Japan*.

Thesis (Name of Journal and its Date, Title and Author of Thesis, etc.)

Xu, Yuelei. (2022). Analysis of the Impact of Yen Appreciation on Economic Efficiency in the Context of Japan-U.S. Game. *Japanese Studies* (04), 48-57.

Xu, Yuelei. (2022). The Role and Changes of Japan's Third Party Market in the Context of Belt and Road, Belt and Road Horgos Forum Award of Excellence (Internal publication) .

Book (Publisher and Date of the Book, Title and Author of the Book, etc.)

Xu Yuelei, Japan's labor market in 2022: a shock recovery, in *2023 Blue Book of the Japanese Economy*