

## CHAPTER V

### CONCLUSION AND IMPLICATIONS

#### A. Conclusion

This study aims to analyze the impact of the digital economy on employment in Indonesia during the 2019–2023 period, using indicators of Information and Communication Technology (ICT) usage, the percentage of e-commerce businesses, the Covid-19 pandemic, and mean years of schooling. Based on the results of the panel data regression analysis and the discussion presented in Chapter IV, the following conclusions can be drawn:

1. The use of Information and Communication Technology (ICT) has a negative effect on employment in Indonesia.
2. The percentage of e-commerce businesses has a negative effect on employment in Indonesia.
3. Mean years of schooling has a positive effect on employment in Indonesia.
4. The Covid-19 pandemic does not have a different between pandemic and without pandemic on employment in Indonesia.

#### B. Implication

Based on the conclusions obtained, this study has several implications as follows:

1. For the Government

The results of this study indicate that the development of the digital economy plays an important role in enhancing employment. Therefore, the government needs to continue promoting the development of digital infrastructure and the expansion of ICT access evenly across regions in order to reduce the digital divide among provinces. In addition, e-commerce development policies should be directed not only toward business growth but also toward the creation of sustainable employment opportunities.

The findings regarding the negative impact of the Covid-19 pandemic on employment highlight the importance of adaptive labor policies in responding to crises. The government needs to strengthen labor protection programs, enhance skills development (reskilling and upskilling), and provide support for sectors that have been significantly affected, so that labor market recovery can proceed more quickly and inclusively.

## 2. For Society

For business actors, the results of this study indicate that the adoption of digital technology and e-commerce can serve as important strategies to enhance competitiveness and expand employment opportunities. However, business actors also need to pay attention to improving workforce competencies so that workers are able to adapt to technological changes. For the workforce, the findings of this study

emphasize the importance of improving education and skills, particularly digital skills, in order to compete in an increasingly digitalized labor market. Investment in education and training is key to increasing employment opportunities and reducing the risk of

### C. Research Limitations

This study aims to analyze the impact of the digital economy and the COVID-19 pandemic on employment in Indonesia during the 2019–2023 period using panel data regression analysis. Although the empirical results provide important findings regarding the relationship between ICT usage, the percentage of e-commerce enterprises, mean years of schooling, and the COVID-19 pandemic on employment, several limitations should be acknowledged.

1. This study employs provincial-level panel data covering 34 provinces in Indonesia obtained from Indonesia Statistic (BPS). While this approach allows for the analysis of interprovincial variation and time dynamics, it does not fully capture intra-provincial disparities or sectoral differences. Consequently, heterogeneity at the district/city level and variations across economic sectors cannot be examined in greater depth.
2. The measurement of the digital economy in this study is limited to two primary indicators, namely ICT usage and the percentage

of e-commerce enterprises. Although these variables represent key aspects of digital transformation, they may not comprehensively reflect the broader digital ecosystem, such as digital investment, platform-based employment, fintech development, artificial intelligence adoption, or digital startup expansion. Therefore, the estimated impact of digitalization on employment may not entirely capture the complexity of structural transformation occurring in the Indonesian economy.

3. Employment is proxied by the Labor Force Participation Rate (LFPR). While LFPR reflects the extent of labor market participation, it does not directly measure employment quality, wage levels, productivity, sectoral employment shifts, or the distinction between formal and informal employment. As a result, this study cannot fully assess whether digitalization contributes to decent job creation or merely influences participation dynamics.
4. The COVID-19 variable is measured using a dummy specification distinguishing between pandemic and non-pandemic periods. Although this approach effectively captures structural differences across time, it does not account for variations in the intensity of the pandemic across provinces, such as differences in mobility restrictions, infection rates, or sector-

specific disruptions. Hence, the differential regional impact of the pandemic may not be completely reflected in the model.

5. Although the Fixed Effect Model (FEM) controls for time-invariant provincial heterogeneity, the possibility of omitted variable bias remains. Other macroeconomic determinants of employment—such as regional investment, industrial structure, minimum wages, government expenditure, and urbanization—were not included in the regression model and may also influence labor market outcomes.

#### **D. Recommendations for Future Research**

Based on the limitations identified above, several recommendations for future research can be proposed in order to enrich the analysis of the relationship between the digital economy, external shocks, and employment in Indonesia.

1. Future research is encouraged to utilize more disaggregated data, such as district/city-level panel data, sectoral employment data, or micro-level data derived from labor force surveys. Such an approach would allow for a more comprehensive understanding of how digital transformation affects different demographic groups, skill levels, and sectors of the economy.
2. Subsequent studies may incorporate broader and more comprehensive digital economy indicators, including digital

infrastructure investment, fintech penetration, digital platform activity, startup ecosystem growth, and artificial intelligence adoption. The inclusion of these variables may provide a more accurate representation of digital economic transformation and its implications for labor demand.

3. Future research should consider examining employment quality in addition to labor force participation. Indicators such as wage levels, productivity, job stability, and the formal–informal employment composition could provide deeper insights into whether digitalization leads to inclusive and sustainable employment growth.
4. The impact of the COVID-19 pandemic could be analyzed using more detailed and continuous measures, such as mobility restriction indices, confirmed case rates, or sector-specific output contractions. This would enable a more precise estimation of the magnitude and heterogeneity of the pandemic shock on employment across provinces.
5. Further research may explore interaction effects between digital economy variables and human capital indicators, particularly mean years of schooling. Such analysis would help determine whether education moderates the relationship between digitalization and employment, in line with the theoretical

framework of labor demand and skill-biased technological change.

