

Building a Homecare Product Skill Model with GDP/GNP as a Moderation Variable Towards Entrepreneurship in the Industrial Era 4.0/5.0



Margaretha Prihatiningsih¹, Yusup Hari Subagya², Remon Gunanta³

Universitas Pignatelli Triputra, Indonesia^{1,2,3}

Email: margaretha.stie.pignatelli@gmail.com, yusuphari67@gmail.com, remon.gunanta123@gmail.com

KEY WORDS

KWU Training Model, Home Care Products, Entrepreneurship Model, Productivity and Innovation, GDP/GNP, Industrial Era 4.0/5.0.

ABSTRACT

This research aims to build a productive and innovative skill training model for various home care and entrepreneurship products with GDP/GNP as a moderation variable, focusing on the Industry 4.0/5.0 era. The various home care product skill training models tested in this study include digital-based learning (X1), introduction of new technologies (X2), contextual and personalization approaches (X3), industry partnerships and collaborations (X4), and soft skills development (X5), which act as independent variables. The entrepreneurial model analyzed includes productive and innovative entrepreneurship in the context of Industry 4.0 (Y1) and Industry 5.0 (Y2), with GDP/GNP (Z1 and Z2) as moderation variables, which are measured by indicators of consumption, investment, and government spending. The research method uses a qualitative approach with data analysis from 40 respondents who have a good perception of entrepreneurship, tested using SPSS with correlation regression test, F test, t test, ANOVA test, and classical assumptions. The results of the study show that: (1) Digital-based learning (X1) with GDP moderation (Z1) has a significant effect on productive entrepreneurship in the era of Industry 4.0 (Y1); (2) The contextual and personalization approach (X3) with GDP moderation (Z1) has a negative effect on the productive entrepreneurship model (Y1); (3) Soft skill development (X5) with GDP moderation (Z1) has a significant positive effect on productive entrepreneurship (Y1); (4) The implementation of the introduction of new technologies (X2) with GNP moderation (Z2) has a negative but not significant effect on innovative entrepreneurship (Y2); and (5) Industry partnerships and collaborations (X4) did not have a significant effect on both entrepreneurial models. In conclusion, the digital-based training model and soft skill development have a significant influence on productive entrepreneurship, while industry partnerships and new technologies have not been shown to have a significant effect in the context of this study.

1. INTRODUCTION

In the era of Industry 4.0, technological advances and digitalization have brought major changes in almost all sectors of life, including the business and entrepreneurship sectors (Radiansyah, 2022). Industry 4.0 requires business people to have more adaptive, innovative, and productive skills in facing global challenges (Fonna, 2019).

One of the fields that has the potential to grow rapidly in the midst of this digital era is the home care industry, which is a home health care service that can make a significant contribution to improving people's welfare, especially for the elderly and individuals with special needs (Rakib & Ahmad, 2023).

However, to achieve the optimal level of



innovation and productivity in this industry, the right skills are needed for business actors. This includes technical skills in service, managerial understanding, as well as the ability to take advantage of evolving technology. Therefore, there is a need for training that not only focuses on technical skills, but also integrates entrepreneurial aspects, so that business actors can develop home care businesses in a sustainable manner and innovate in facing competition in the digital era.

The importance of entrepreneurial skills is also influenced by macroeconomic factors, such as Gross Domestic Product (GDP) and Gross National Product (GNP). As the main indicators of a country's economic growth, GDP and GNP can moderate the impact of entrepreneurship skills training on business productivity and competitiveness in the home care sector. In this context, GDP/GNP can play a role as a moderation variable that affects the relationship between skills training and success in running a home care business. People who have a high level of entrepreneurial skills, supported by a strong understanding of macroeconomic conditions, will have a greater opportunity to create productive and innovative business opportunities, while contributing to overall economic growth.

However, to achieve this, a proper training model is needed, based on community needs and local potential, that integrates home care skills training with an understanding of GDP/GNP as a moderating variable. Thus, this study aims to build a home care product skills training model that not only develops practical skills but also takes advantage of macroeconomic conditions (GDP/GNP) to create more productive and innovative entrepreneurship, which in turn can increase competitiveness in the Industry 4.0 era.

The emergence of various eras or periods in economic activities marks that economic activities will undergo rapid changes at any time so that special attention is needed to deal with problems related to the sustainability of a business venture fostered in the forum of MSMEs in general in Indonesia and especially MSMEs in the city of Solo, Central Java, which has also become a barometer of economic activities of all ASEAN nations and even the whole world, both in times of crisis as well as the non-economic crisis period that he experienced.

When viewed from the perspective of the ASEAN economy, the industrial era is divided into several eras, namely the beginning of the covid 19 period which spread in Indonesia, causing economic activities to decline and even almost disappear from their generation. Then there is the so-called Covid 19 Pandemic Era; The New Normal Era and the Normal Era for economic activities for the next 3 to 5 years from 2019/2020. Each Era has problems that have an impact on the community's economy. The pandemic era is marked by many people who are affected by the covid 19 virus so that they have to get sick and eventually die, while those who are still in recovery and prevention urgently need support from various parties, both the private health office, the government and also government funding support.

During this period, it had a great impact on business activities that many went out of business, many companies narrowed their business ventures and many labor reductions. Meanwhile, the New Normal Era has been restored in all fields, both in the health sector with covid prevention which requires special handling, both operational and funding, strongly supported by the government in the era of Mr. Joko Widodo for all levels of society. Likewise, economic recovery through the Economic

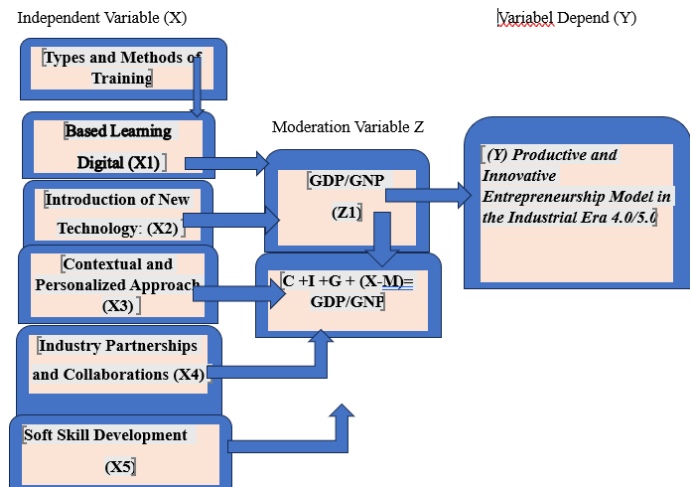


Recovery Movement by increasing the Ranking of Economic Activities in the MSME business sector. Motivation for MSME businesses is very prevalent and has received attention from various interested parties to always grow and develop in line with the development of the business world that collaborates with various business worlds such as culinary property, health services, transportation, online services and so on (Angeline et al., 2022).

In essence, recovery efforts in all fields are intensified in all lines of society so that they experience a great struggle for the success of the recovery movement to the grassroots of the problems they face. This is also inseparable from the support of the academic world who prioritizes solving urgent community problems to be solved quickly, accurately and credibly by young and developing business actors. Lecturers, scientists and experts are not left behind to have more benefits and have a higher value to be able to take part in it through the Tridharma of Research and Community Service activities, including through skill training activities programmed through the Tridharma of Higher Education, contributing plus to many communities, especially in the city of Solo and its surroundings and Central Java in general.

2. METHOD

The activities carried out were to collect research data from the indicators that formed the variables studied, for example: (1) The type of homecare product skills trained; (2) type of training and training method; (3) Searching for GDP/GNP data using existing formulas; (4) Looking for Productive and Innovative Entrepreneur Data. (5) The model to be built.



Description: Independent Variable (X)

X1: Digital-Based Learning

X2: Introduction of New Technologies

X3: Contextual and Personalized Approach

X4: Industry Partnerships and Collaborations

X5: Soft Skill Development

Moderation Variable: Z1 ($C + I + G + (X - M)$)

Dependent Variable (Y): Productive Entrepreneurship Model and Industrial Era 4.0/5.0 Innovation. Data analysis method using SPSS With the latest version of smart PLS By applying data analysis that can form a model that will be built in this study with moderation variables. Judging from the above framework of thinking, it is stated that the independent variables are: X1: Digital-Based Learning; X2 : Introduction of New Technology; X3 : Contextual and Personalized Approach; X4 : Industry Partnerships and Collaborations; X5: Soft Skill Development; Moderation Variable: Z1 ($C + I + G + (X - M)$); Dependent Variable (Y): Productive Entrepreneurship Model and Innovative Industry Era 4.0/5.0. Moderation Variable: Z1 ($GDP = C + I + G + (X - M)$); GDP (Gross Domestic Product) is the value of goods and services produced by citizens in the country and foreigners in the country. Meanwhile, GNP (Gross National Product) is the value of goods and services produced by citizens of a country

both domestically and abroad. GDP can be calculated by adding all household expenses or adding up all the income paid by the Company:
 Z_1 (GDP) = $Y = (C + I + G + (X - M))$. Z_2 Moderation Variable (GNP) = GDP – Products of foreign nationals in the country plus products of citizens abroad. $GNP = GDP + (\{FLN - PFDN\})$.

Information:

GNP: Gross National Product

GDP: Gross Domestic Product

PFLN: Income Factor of Production of Citizens Abroad

PFDN: Income of Production Factors of Foreign Nationals in the Country.

$Y = GDP =$ Gross Domestic Product; $C =$ Personal Consumption; $I =$ Investment; $G =$ Government Expenditure; $X =$ Export; $I =$ Import. Dependent Variable (Y): Productive Entrepreneurship Model and Industrial Era 4.0/5.0 Innovation.

Therefore, the following research hypothesis can be formulated:

H1: The Implementation of Digital-Based Learning with GDP Moderation Affects Productive and Innovative Entrepreneurship Models

H2: Implementation of the Introduction of New Technologies with GDP Moderation Affects Productive and Innovative Entrepreneurship Models

H3: Implementation of Contextual and Personalized Approaches with GDP Moderation Affects Productive and Innovative Entrepreneurship Models

H4: Implementation of Industrial Partnerships and Collaborations with GDP Moderation Affects Productive and Innovative Entrepreneurship Models.

H5: Implementation of Soft Skill Development with GDP Moderation Affects Productive and Innovative Entrepreneurship Models

H6: Implementation of Digital-Based Learning

with GNP Moderation Affects Productive and Innovative Entrepreneurship Models

H7: Implementation of Introduction of New Technology with GNP Moderation Affects Productive and Innovative Entrepreneurship Models.

H8: Implementation of Contextual and Personalized Approaches with GNP Moderation Affects Productive and Innovative Entrepreneurship Models.

H9: Implementation of Industry Partnerships and Collaborations with GNP Moderation Affects Productive and Innovative Entrepreneurship Models.

H10: Implementation of Soft Skill Development with GNP Moderation Affects Productive and Innovative Entrepreneurship Models.

Testing

In this third stage, it is used to test how the implementation of the Independent Variable X_1 to X_5 is affected, namely on productive and innovative Entrepreneurship in the industry 4.0 era, where for data processing testing using the SPSS program which is analyzed by moderation regression. The data analysis technique uses SPSS with moderation regression analysis. The data analysis technique used to answer the problem formulation is with the following steps:

1. The Validity Test is the accuracy of the measuring tool used to measure each question item used in the research. If the sig value < 0.05 , it is valid.
2. Correlation Test (Validity): The correlation table shown tests the relationship between variables ($X_{11}, X_{12}, X_{13}, \dots, X_{111}$) using Pearson Correlation. All existing correlation values were statistically significant (with a p value < 0.01), which indicates that the relationship between the variables is significant. Some important points: (1) Correlation Mark: All correlations between variables show a positive (+) relationship,



which means that the higher the value of one variable, the higher the value of other variables. (2) Correlation Strength: Correlation values range from 0.473 to 0.900. This means that the relationship between variables ranges from moderate to very strong. For example, the correlation between X17 and X11 is 0.900, which indicates a very strong relationship. Overall, all correlations between variables were significant and within an acceptable range (with a fairly high correlation coefficient), indicating that the instrument used was valid, and that the variables measured had a significant relationship with each other.

3. Reliability Test: In the Reliability Statistics table, there are two Cronbach's Alpha values: (1) Cronbach's Alpha: 0.932; (2) Cronbach's Alpha Based on Standardized Items: 0.934. A high Cronbach's Alpha value (above 0.7) indicates excellent internal consistency of the instrument used. In this case, the instrument used has excellent reliability, since the value is much higher than the recommended minimum limit (usually 0.7).

The validity test aims to ensure the accuracy of the measuring tools used in the study to measure each question item. In this case, validity is tested by looking at the significance value (sig) of each question item. If the sig value is less than 0.05, then the question item can be considered valid. Therefore, the instrument used in this study shows good validity, because the sig value for each question item meets the criteria that have been set.

Furthermore, a correlation test was used to measure the relationship between the variables in the study, which was measured using Pearson Correlation. The correlation table shows that all the correlation values between the variables (X11, X12, X13, to X111) are statistically

significant with a $p < 0.01$, which indicates a significant relationship between these variables. A positive correlation between variables shows that the higher the value of a variable, the higher the value of other variables. The correlation strength varied between 0.473 to 0.900, indicating a relationship from moderate to very strong, with the highest correlation between X17 and X11 reaching 0.900, signaling a very strong relationship between the two.

To ensure the consistency of the instrument, a reliability test was carried out using Cronbach's Alpha value. Based on the Reliability Statistics table, the instrument used shows two excellent Cronbach's Alpha values, namely 0.932 and 0.934, which are higher than the recommended minimum limit (usually 0.7). This high value indicates that the instrument has excellent internal consistency, so it can be relied on to measure the variables referred to in this study. Thus, both the validity and reliability of the instruments used in this study show excellent quality.

1. Validity Conclusion: (1) The positive correlation found between all the variable pairs indicates that the instrument or data used has a good relationship between the items, and this supports the validity of the construct of the instrument. (2) All p values < 0.05 indicate that the correlation between variables is statistically significant, which means that the relationship between the items in this instrument can be considered valid.
2. Correlation Mark: A positive correlation sign (+) indicates that when one variable increases, the other variables tend to increase as well. This is a sign that the items in the instrument tend to measure the same or related aspects.
3. Reliability Test: Reliability tests such as

Cronbach's Alpha have not been provided in the data presented. However, based on the above correlation results, the instrument used seems to show good consistency between the items measured, as most of the correlations between items show significant and fairly strong relationships. This could be an indication that the instrument is quite reliable.

3. RESULT AND DISCUSSION

Based on the results of the data analysis test

To build a home care product skills training model that is suitable for the era of Industry 4.0 and Industry 5.0, it is necessary to have an integrated, technology-based, and oriented approach to market needs and production efficiency. In this context, the first step is to conduct an analysis of the needs of MSMEs, focusing on the technical and non-technical skills needed, such as the use of digital technology, production automation, product design, and supply chain management. Other important skills include an understanding of evolving market trends, such as sustainability and eco-friendly products. The main challenge for MSMEs is the gap in the use of modern technology, which must be overcome through the right training curriculum (Hasri, 2014).

The design of the training curriculum needs to cover various important aspects, from training in the use of digital technology, such as e-commerce and digital marketing, to the use of software for production management and product design. The training should also involve sustainability aspects, with teaching about environmentally friendly home care product design and production efficiency through automation and robotics technology. Additionally, it is important to include managerial training, such as digital

financial management and technology-based supply chain management. Given the importance of non-technical skills, training should also include the development of soft skills such as effective communication, teamwork, negotiation skills, and leadership (Sulaksono, 2020).

In the era of Industry 5.0, collaboration between humans and technology is the main focus. Therefore, the training must teach MSMEs to work alongside smart technologies such as robotics, AI, and IoT devices in the production process. Gen-Z, as a more tech-savvy generation, expects more interactive and hands-on experience-based training (Priani & Anwar Hidayat, 2023). The training model for them should include simulation-based learning and VR/AR, which can help them understand how automation technology works in production. Gamification-based or challenge-based training is also important for creating a fun and competitive learning experience.

Industry 5.0 also emphasizes the importance of innovative and sustainable design. Training for Gen-Z must teach creative skills in designing eco-friendly home care products and utilizing advanced technologies, such as AI to help with the design process. Additionally, training in digital collaboration skills using tools like Slack, Trello, and Zoom will be crucial to support geographically separated teamwork. Gen-Z also needs to be trained in emotional and leadership skills to lead teams, resolve conflicts, and adapt to rapid technological changes. Continuous learning should be integrated in this training, by providing access to an AI-driven training platform that can tailor the material according to individual needs, as well as digital certifications that recognize the skills acquired.

The skills training model for MSMEs in home care products in the Industry 4.0 and 5.0 era, by



utilizing digital technology, robotics, and AI, can make a significant contribution to skill development, competitiveness, and business sustainability in the future. The technical and non-technical skills gained through this training will help MSMEs not only survive, but also thrive amid rapid technological changes and increasingly complex market demands (Farhan & Shifa, 2023).

The home care and entrepreneurship product training model built for MSMEs in the Industry 5.0 era can have a significant impact on increasing GDP and GNP in the local region. This training prioritizes the development of home care products based on modern technology and the latest skills, which opens up new income potential for local communities, as well as increasing the productivity of the home care sector through the application of efficient production techniques and automation technology. Products produced by MSMEs, such as home cleaners or organic soaps, can not only meet the needs of the local market, but also have the potential to be exported to the international market. Thus, the home care sector can contribute to increasing regional GDP through exports and increasing productivity.

In addition, entrepreneurial training integrated with knowledge of home care products and business management can help create new businesses, which directly contributes to an increase in local GDP. New businesses that grow will create jobs, both directly in the production and marketing process, and indirectly through the supply chain and distribution. With a focus on the utilization of local raw materials and the development of environmentally friendly products, the training can also strengthen the local economy by creating a more efficient and sustainable supply chain.

Furthermore, entrepreneurship training can play a role in reducing the unemployment rate and increasing the competitiveness of MSMEs through the adoption of technology, such as digital marketing and e-commerce (Zefriyenni et al., 2022). Innovative and technology-based home care products can expand local and international markets, increase demand, and ultimately increase domestic consumption and local income. With increasingly competitive products, MSMEs can play a greater role in strengthening the local economy and contributing to GNP, especially through exports that generate foreign exchange for the country. In addition to the direct economic impact, this entrepreneurship training also encourages community empowerment, poverty alleviation, and improving the overall welfare of the community. All of this, both in terms of increasing production, job creation, and exports, will have an impact on the GDP and GNP of regions and countries.

The home care and entrepreneurship product training model built can have great potential in increasing GDP and GNP in the local area. Home care product training, with a focus on modern skills and technology, can create new income opportunities for MSMEs, which in turn will contribute to increasing local GDP. In addition, the development of high-quality local products, such as home cleaners or eco-friendly products, can open up export opportunities, which also boosts the country's GNP.

Entrepreneurship training also has a significant impact, by creating new businesses and jobs, which is directly related to the improvement of the local economy. By introducing skills in business management and marketing, this training supports the development of new ventures, the empowerment of local resources, and the reduction of unemployment. In addition,



the adoption of technology in production and marketing increases the competitiveness of MSMEs, which allows them to compete in both local and global markets.

Overall, the training not only strengthens the local economy by increasing domestic consumption and regional income, but also brings sustainable socio-economic impact, by creating more equitable well-being and helping to alleviate poverty. Through the export of home care products, the country can increase revenue in the form of foreign exchange, which strengthens the national GNP.

A well-built model of home care and entrepreneurship product training can make a significant contribution to increasing the GDP and GNP of the local area in the following ways: (1) Increasing the productivity and quality of local products. (2) Creating jobs and opening new businesses. (3) Increasing economic competitiveness through technology and innovation. (4) Increasing domestic consumption and regional income. (5) Produce exportable products, which increases the country's GNP. With the right approach, this training model not only provides short-term economic benefits but can also create a solid foundation for sustainable economic growth at the local and national levels.

Based on the Results of Hypothesis Tests

The results of the study show that the implementation of digital-based learning moderated by GDP has a significant effect on productive and innovative entrepreneurial models. The model was able to account for about 55% of the variation in entrepreneurship, with the test results showing a significance value of less than 0.05, meaning the relationship was very significant. This indicates that digital-based learning plays an important role in increasing

productive and innovative entrepreneurship in the Industry 4.0 era.

However, the introduction of new technologies moderated by GDP did not show a significant influence on entrepreneurial models. The test results show that this variable is irrelevant and does not contribute significantly to productivity and innovation in entrepreneurship, so this hypothesis is rejected. In contrast, the contextual and personalization approach moderated by GDP has a negative effect on productive and innovative entrepreneurship. This was revealed from the test results that showed a negative coefficient value, which indicates that although this approach has the potential to adapt learning to individual needs, its effect in the context of entrepreneurship is actually less favorable.

Industry partnerships and collaborations, which are also moderated by GDP, have not shown a significant influence on productive and innovative entrepreneurial models. Regression tests show that this variable does not have a strong impact, and therefore the hypothesis related to this partnership is rejected. Meanwhile, soft skill development moderated by GDP turns out to have a significant positive influence on productive and innovative entrepreneurship. This shows that interpersonal and communication skills acquired through soft skills training play an important role in increasing entrepreneurial effectiveness.

On the other hand, when GNP is used as a moderation variable, the influence of digital-based learning, the introduction of new technologies, contextual and personalization approaches, industry partnerships, and soft skills development on entrepreneurship does not show a significant influence. All hypotheses involving GNP moderation are rejected, which suggests that these macroeconomic factors do



not significantly affect the entrepreneurial model in this context.

Overall, the results of this study highlight the importance of implementing digital-based learning, soft skills development, and relevant contextual approaches in creating productive and innovative entrepreneurship in the Industry 4.0 era. However, new technologies and industry partnerships, while important, have not made a significant contribution to this model. The results of this research provide valuable insights for the development of entrepreneurship education curriculum and policies that support skill development and innovation in the business world.

The study shows that digital-based learning moderated by GDP has a significant influence on productive and innovative entrepreneurship, explaining about 55% of the variation in entrepreneurship in the Industry 4.0 era. In contrast, the introduction of new technologies, contextual and personalization approaches, and industry partnerships have not shown significant influence. Soft skill development plays a positive role in increasing entrepreneurship, while the GNP factor does not moderate the relationship between these variables. The results of this study emphasize the importance of digital learning and soft skills in encouraging productive and innovative entrepreneurship, while new technologies and industry partnerships have not contributed significantly to this model.

The results of this study show that the implementation of digital-based learning with GDP moderation has a significant effect on productive and innovative entrepreneurial models in the Industry 4.0 era, with a contribution of 55%. In addition, the implementation of soft skill development has also proven to have a positive and significant

effect. However, the introduction of new technologies, contextual and personalization approaches, and industry partnerships have not shown a significant influence on entrepreneurship. On the other hand, GNP moderation does not have a significant influence on the entrepreneurial model in the Industry 5.0 era. Overall, only the H1, H3, and H5 hypotheses were accepted, while H2, H4, H8, and H9 were rejected, indicating that certain factors such as digital learning and soft skills development have a significant contribution to enhancing productive and innovative entrepreneurship in the Industry 4.0 era.

In this study, several hypotheses that have been tested have been rejected, providing insight into improvements and further evaluation of the models used.

The H2 hypothesis that the implementation of new technology (Var-X2Z1) has an effect on productive and innovative entrepreneurship is rejected. This occurs due to the presence of an indication of high multicollinearity, which indicates that the relationships between variables in the model are disrupted. Therefore, the use of this indicator is not continued, and it is recommended to include other variables, such as training using existing technologies and the gradual development of innovations, which may be more relevant for productive and innovative entrepreneurial models in the era of Industry 4.0.

The H4 hypothesis, which tests the effect of the implementation of industrial partnerships and collaborations (Var-X4Z1) on productive and innovative entrepreneurial models with GDP moderation, was also rejected. A significance value greater than 0.05 (0.088) and an insignificant beta value (0.086) indicate that this association is unacceptable as evidence of



significant influence. This research may be influenced by the lack of understanding of respondents, especially MSME actors who may not have enough experience or knowledge in establishing partnerships and collaborations with industry, which explains why industry collaboration does not show significant influence.

In this regard, it is advisable to re-evaluate the theory underlying this relationship, including considering other, more relevant variables to understand the relationship between partnerships, industrial collaborations and productive and innovative entrepreneurship. Moderation variables or other mediators can be included to deepen the analysis. Additionally, control variables such as company size, industry sector, or macroeconomic factors can be added to provide a clearer picture. The H8 hypothesis that tests the implementation of a contextual and personalization approach (Var-X3) with Z2-GNP moderation on the entrepreneurial model is also rejected. A beta value greater than 1 (0.239) and a significance value greater than 0.05 (0.201) indicate that the influence is not significant. This shows that although the relationship under test exists, the power of influence is not large enough to influence the model of entrepreneurship in question. It is recommended to re-evaluate the relevance or influence of Z2-GNP as a moderating variable. In addition, there may be other, more relevant factors that can be used as a moderator, such as entrepreneurial skills or external factors such as technology.

Similar to other hypotheses, the results showing that the X3 variable with Z2-GNP moderation does not have a significant effect on productive and innovative entrepreneurial models in the Industry 4.0 era require further attention. Researchers can consider exploring other variables that are more relevant, such as

digitalization or organizational innovation capacity. Re-evaluation of this hypothesis is also recommended to ascertain whether these results are consistent and whether there may be a more appropriate approach.

Furthermore, other hypotheses, such as H9, which tests the implementation of industrial partnerships and collaborations with Z2-GNP moderation against productive and innovative entrepreneurial models in the Industry 4.0 era are also rejected. With a small beta value (0.084) and a significance value greater than 0.05 (0.249), the results of this analysis show that this relationship does not have a significant effect on the productive and innovative entrepreneurial model. Therefore, it is advisable to re-evaluate the relevance of GNP as a moderation variable, and perhaps consider other more relevant macroeconomic variables such as innovation capacity or technological factors.

In general, the results of the study show that some of the variables tested in the context of industry 4.0 and 5.0 do not contribute significantly to productive and innovative entrepreneurial models. Therefore, improvement measures can include re-evaluation of theoretical models, substitution or modification of variables, as well as consideration of more relevant external and internal factors to understand the influence on entrepreneurship.

4. CONCLUSION

Based on the results of analysis and hypothesis testing, this study concludes that digital-based learning moderated by GDP has a significant influence on productive and innovative entrepreneurship in the Industry 4.0 era, with a contribution of 55%. Soft skill development has also proven to play a positive role in increasing



entrepreneurship. However, the introduction of new technologies, industry partnerships, contextual and personalization approaches, and GNP moderation have not shown a significant influence on entrepreneurship. This research suggests focusing on digital learning and soft skills in the development of MSME entrepreneurship, as well as re-evaluating the use of new technologies and industry collaboration as more relevant factors in the context of entrepreneurship in the era of Industry 4.0.

5. REFERENCES

- Angeline, A., Allister, D., & Gunawan, L. L. (2022). Pengembangan UMKM Digital Sebagai Upaya Ketahanan Bisnis Pasca Pandemi Covid-19. *Prosiding Serina*, 2(1), 85–92.
- Farhan, A., & Shifa, A. W. (2023). Penggunaan metode pembayaran QRIS pada setiap UMKM di era digital. *Jurnal Pengabdian Kepada Masyarakat Nusantara*, 4(2), 1198–1206.
- Fonna, N. (2019). *Pengembangan Revolusi Industri 4.0 dalam Berbagai Bidang*. Guepedia.
- Hasri, B. (2014). *Analisis pengembangan usaha mikro kecil menengah untuk meningkatkan pertumbuhan ekonomi sebagai upaya pengentasan kemiskinan dan pengangguran daerah di kabupaten Ngawi*. UNS (Sebelas Maret University).
- Priani, A., & Anwar Hidayat, S. H. (2023). Pengembangan UMKM Berbasis Teknologi Digital dan Ekonomi Kreatif di Desa Kutamakmur. *ABDIMA JURNAL PENGABDIAN MAHASISWA*, 2(2), 5382–5390.
- Radiansyah, E. (2022). Peran Digitalisasi Terhadap Kewirausahaan Digital: Tinjauan Literatur Dan Arah Penelitian Masa Depan. *JMBI UNSRAT (Jurnal Ilmiah Manajemen Bisnis Dan Inovasi Universitas Sam Ratulangi)*, 9(2), 828–837.
- Rakib, M., & Ahmad, M. I. S. (2023). Analisis Pengembangan UMKM Melalui Digital Entrepreneurship dengan Model Triplehelix pada Pasar Hanggar Talasalapang di Kota Makassar. *Journal of Economic Education and Entrepreneurship Studies*, 4(1), 489–502.
- Sulaksono, J. (2020). Peranan digital marketing bagi usaha mikro, kecil, dan menengah (umkm) desa tales kabupaten kediri. *Generation Journal*, 4(1), 41–47.
- Zefriyenni, Z., Eliza, E., Azka, B. P., & Lusiana, L. (2022). Pengembangan Umkm Berbasis Digital Pada Umkm Batu Gadang Kecamatan Lubuk Kilangan Padang. *Kumawula: Jurnal Pengabdian Kepada Masyarakat*, 5(3), 558.