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STRATEGIES FOR OPTIMISING THE ROLE OF YOUTH IN KEBUMEN IN FACING THE INDUSTRIAL REVOLUTION 5.0

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Abstract. This study aims, first, to examine the role of Kebumen youth in efforts to revive the local economy. The steps or actions referred to are the efforts of Kebumen youth in utilising technology in the management of their businesses. The second objective of this study is to identify the inhibiting and driving factors that optimise the role of Kebumen youth in the regional economy. The third objective is to develop strategies to optimise the role of Kebumen youth in the economic development process, in this case, the utilisation of technology. This study is an exploratory descriptive study that provides an overview through a series of surveys of selected respondents. This series of surveys was conducted with the aim of describing the phenomena occurring in the community (descriptive function). The results of this study are as follows. MSMEs managed by respondents in Kebumen Regency include businesses in the building materials, foodstuffs, handicrafts, and textiles sectors. The majority of MSME business units in the food sector use simple and makeshift technology (tools). The results of the evaluation and measurement of the TRL of MSMEs in Kebumen show that all samples have passed the measurement at levels 1 to 3. Less than 50% of units have passed the intermediate level measurement, namely levels 4 to 6; while less than 10% of units have passed the upper level measurement, namely levels 7 to 9. This explains that the production aspect of MSMEs in Kebumen requires government intervention in the use of appropriate technology and supporting indicators such as management, hygiene in production, and human resources. The main driving factor in business management carried out by respondents is that managers are sufficiently literate in production technology, although they are not yet fully able to adapt to the ongoing industrial revolution 5.0.

Keywords: Strategy, optimisation, role, youth, industrial revolution.

I. INTRODUCTION

Indonesia is a developing country with a population of 284,438,800 in 2025 (www.bps.go.id). This large population is both an opportunity and a threat because the population has a dual role, both as consumers and as workers, which are also components that drive economic development. Research conducted by Dewi & Aminah (2019) proves that the workforce has a positive and significant effect on economic growth. Indonesia's economic problems are not only about how to spur economic growth but also the level of readiness of human resources to carry out production and income distribution activities to the community. There are several companies that are well prepared to face the industrial revolution, but there are also many companies that have not been able to adapt to global changes. Research conducted by Sandika Faturahman (2021) shows that most employees of PDAM TIRTA ASASTA Kota Depok have a high level of readiness to face Industry 4.0. Thus, economic development is not only measured by the overall increase in GNP, but also by the distribution of income across all communities, as well as who has enjoyed the results (Ardiyanto Maksimilianus Gai, Yunada Arpan & Marito, 2024).

The population's position as consumers motivates businesses to create a large supply of goods due to the abundance of potential consumers. There is a possibility that product sales will always increase if there are many people in a country. The position of the population as workers can initially be seen as a potential for efficient production. Production efficiency results in low production costs. This low-cost production allows companies to set low prices for their products, which will attract people to use them (Asrizal, 2018). This chain leads to increased sales and profits. Abundant profits lead to higher production levels and increased use of production factors. Increased use of production factors means that there has been an improvement in a country's economic conditions. Increased use of production factors indicates an improvement in economic conditions. The use of these factors leads to an increase in the income received by the production factors involved.

A large population in a country will result in lower labour costs compared to countries with smaller populations (Asrizal, 2018). This occurs due to competition among workers. In addition, labour costs that are lower than the cost of machinery or technology used to carry out production activities make companies in developing countries prefer to use more workers

Volume 09, Number 03, Page 1831-1839
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than machines and technology. The technology created today is more sophisticated and cheaper than labour costs (L. Hadi Adha, Zaeni Asyhadie, 2020). Therefore, many companies in Indonesia are more interested in using machines than labour.

For entrepreneurs who can recognise opportunities, this also represents a new business area that has never existed before. However, for business actors who are unable to adapt to the changes brought about by technology, this is a fairly effective way to shut down their businesses because consumers will increasingly abandon these businesses and products. This will certainly have an impact on the emergence of new unemployment caused by changes in production patterns and people's lifestyles in general (L. Hadi Adha, Zaeni Asyhadie, 2020).

The development of human capital is crucial in facing the 5.0 industrial revolution because this revolution requires humans to utilise technology in order to survive; meanwhile, the utilisation of technology cannot be done without a learning process. Humans are a form of capital, just like physical and technological capital (Adriani, 1975). Human capital is a qualitative dimension of human resources. The qualitative dimensions of human resources, such as expertise and skills, possessed by an individual will influence their productive capacity.

In the era of the 5.0 industrial revolution, all components of society, especially young people, are required to be more active in adapting to change. The role of young people must be optimised because, in addition to occupying the largest position in terms of numbers, young people are also a component of society that tends to be more adaptive in facing change compared to other age groups. However, to date, no appropriate strategy has been formulated to optimise the role of young people in facing the industrial revolution 5.0, commonly referred to as the era of disruption. The above reasons provide a strong background for researchers to conduct research on "Strategies for Optimising the Role of Kebumen Youth in Facing the Industrial Revolution 5.0".

II. RESEARCH METHODS

This research is an exploratory descriptive study that provides an overview through a series of surveys of selected respondents. This series of surveys was conducted with the aim of describing the phenomena occurring in society (descriptive function).

Population and Sample

The population in this study is young people who reside in Kebumen Regency and are members of youth organisations. The sample in this study is representatives of youth organisations in Kebumen Regency.

Data collection techniques

In this study, data collection methods were obtained from primary and secondary data. Primary data was collected from samples through surveys, questionnaires, and focus group discussions. The sampling technique used was *purposive sampling*. The criteria used in selecting informants were: 1) members of youth organisations in Kebumen Regency, 2) residing in Kebumen Regency, and 3) managing a business.

Data Analysis

Part of this activity was to measure the capabilities of businesses managed by young people who are members of youth organisations in Kebumen Regency. The level of business readiness is determined by measuring the industry's ability to adopt technology using the Technology Readiness Level (TRL) indicator. TRL is a measurement of technology readiness defined as an indicator that shows how ready or mature a technology is to be applied and adopted by users/prospective users (Hetti et al., 2020) . Technology readiness level is a systematic measurement system that supports the assessment of the maturity or readiness of a particular technology and the comparison of maturity or readiness between different types of technology (Hetti et al., 2020) .

1. TRL Measurement Tool
   Technology readiness level measurement is conducted using a technometer. A technometer is spreadsheet-based software from Microsoft Excel ™that collects several standard questions for each level and displays the TRL graphically. This software is quite helpful in the TRL measurement process (which can be done repeatedly). The technometer provides a brief overview of the maturity status of a technology at a given time. In addition, the technometer can also be used to evaluate the historical process of achieving technology readiness/maturity from technology development programmes that have been carried out.
2. TRL Measurement Process
   Based on technology documents and supporting data, TRL is measured by checking off a list of requirements and conditions for each agreed or initially consensus TRL level. The measurement begins by checking off the requirements and conditions for the lowest TRL (TRL 1).
   a. If all TRL 1 requirements and conditions are met (the 'met' threshold includes those that must be approved or become consensus and the value is usually between 75 and 100%), the process continues with the TRL 2 requirements and conditions checklist and so on to higher TRL levels.
   b. The highest TRL level that meets the requirements and conditions indicates the TRL achievement level for the technology being measured. This measurement provides a brief overview of the current maturity status of the technology. If the TRL measurement is repeated within a certain period of time, the TRL results can be used to evaluate the historical process of what has been done in the technology programme and the achievement of technology readiness/maturity.
   c. TRL measurement results can provide information and data to support decision-making processes regarding technology utilisation and investment or the formulation of technology priority programmes.
   d. TRL measurements of several technologies provide information about the technologies produced and their level of readiness. These results can be used to support programme priority proposals, selection, and budget allocation for research and development activities.

Volume 09, Number 03, Page 1831-1839
e-ISSN: 2598-120X; p-ISSN: 2598-117X

III. RESULTS AND DISCUSSION

A total of 15 representatives of youth organisations in Kebumen Regency were gathered. These representatives were Sahabat Disabilitas Kebumen, Gerakan Pemuda Ansor, Karangtaruna, KNPI, HMI, PMII, Kebumen Young Entrepreneurs Community, Muhammadiyah Youth, Nasiyatul Aisyiah, Muhammadiyah Student Association, Fatayat Nahdlatul Ulama, Nahdlatul Ulama Student Association, AMPI, Banteng Muda Indonesia (BMI), and Banser. The following are the results of the TRL measurement.

Determination of Industrial Sectors

The determination of the industrial sector consists of four categories. This determination is based on the raw materials used and/or the products produced by MSME business units. The four categories are: 1) building materials that produce products such as tiles and various items related to building materials; 2) handicrafts that produce bags, brooches, decorative flowers, and the like; 3) foodstuffs that produce products such as brown sugar; and 4) textiles, which include garment manufacturing business units. The following is the distribution of respondents based on industry.

Table 1. Sample Distribution by Industry

No	Industry	Number
1	Construction materials	3
2	Skills	4
3	Food	3
4	Textiles	5
	Quantity	15

Source: Tekno-meter Results, 2025

TRL Measurement Results for Each Level

The following are the TRL measurement results for each level.

a. Level 1

At level 1, all respondent measurements are met. This indicates the lowest level of technological readiness. At this level, the indicators are assumptions and basic laws, such as physics/chemistry, which are used in the technology and have been determined. Literature studies on the basic principles of the technology to be developed already exist indirectly. The composition of raw materials in each business unit already exists with a tendency to be passed down from predecessors. The measurement results by industry can be seen in the following table:

Table 2. Measurement Results for Level 1

Level 1 Values	Construction materials	Expertise	Food	Textiles
100%	3	4	3	5
Total	3	4	3	5

Source: Tekno-meter results, 2025

b. Level 2

Discoveries at this level have been made. The practical principles of the technology have been implemented and its practical applications can be explored and developed, but its application is speculative and there is no detailed evidence or analysis to support the assumptions of the technology used. The equipment and systems used in MSME business units have generally been identified as simple. When reviewed from a literature study, the technology to be developed is feasible for implementation. Theoretical and empirical designs have been identified. The limitations of the basic elements of MSME business units are known and can be developed. The characterisation of the technology components used by the MSME business units to be developed has been mastered and understood. The performance of each element of the technology to be developed has been predicted. Preliminary analysis shows that the main functions required can work well. Models and simulations have been prepared to test the validity of the basic principles. Analytical research is used to test the validity of the basic principles. The technological components to be developed separately can function well. The measurement results based on the industrial field can be seen in the following table:

Table 3. Level 2 Measurement Results

Level 2 Values	Construction materials	Skills	Food	Textiles
100%	3	4	3	5
Total	3	4	3	5

Source: Tekno-meter results, 2025

c. Level 3

Research and development has actively commenced, although the SME business unit is unaware of this. These research and development activities have not yet reached the level of analytical laboratory studies to physically validate analytical predictions about separate technological elements. Analytical studies supporting predictions of the performance of technological elements have been conducted through production trials in SME business units. The characteristics and performance capacity of the basic system have been identified and predicted, but no laboratory experiments have been conducted to test the feasibility of implementing the technology. Testing is usually carried out directly by the business unit itself. Testing is conducted using models and simulations that support predictions of the capabilities of technological elements by SME business units. Theoretically, empirically, and experimentally, it is known that the components of the technology system can work well even though no laboratory research has been conducted using dummy data. The technology is declared scientifically feasible (analytical studies, models/simulations, experiments). The measurement results according to industry are listed in the following table:

Table 4. Level 3 Measurement Results

Level 3 Values	Construction materials	Skills	Food	Textiles
100%	3	4	3	5
Total	3	4	3	5

Source: Tekno-meter results, *2025*

Volume 09, Number 03, Page 1831-1839
e-ISSN: 2598-120X; p-ISSN: 2598-117X

d. Level 4

Basic technology components are integrated to ensure that these components work and/or function simultaneously. This condition still has relatively low reliability compared to the final system . Separate component laboratory tests have been conducted. This testing occurs because SME business units use technology that is already available on the market, meaning that the technology has been tested by the technology manufacturer. The system requirements for the application according to the user are known. Laboratory test results on the components show that they can operate. Tests of the main functions of the technology are carried out in a relevant environment. A laboratory-scale technology prototype has been created. Component integration research has begun. The 'key' processes for manufacturing have been identified and reviewed in the laboratory. The integration of the technology system and laboratory design has been completed (low fidelity). Based on the samples in this level 4 measurement, 15 samples have passed the measurement indicators. The measurement results according to industry sector are shown in the following table:

Table 5. Level 4 Measurement Results

Level 4 Values	Construction Materials	Expertise	Food	Textiles
60	1		1	
100%	2	4	2	5
Total	3	4	3	5

Source: Tekno-meter results, 2025

e. Level 5

The reliability of integrated technology has improved significantly. Basic technology components are integrated with sufficiently realistic supporting elements so that relevant technologies can be tested in a simulated environment, for example, the integration of components in a laboratory that already has high reliability. Hardware production preparations have been made. Market research and laboratory research are used to select manufacturing processes. Prototypes have been created. Supporting equipment and machinery have been tested in the laboratory. System integration has been completed with high accuracy and is ready to be tested in a real/simulated environment. The accuracy of the prototype system has been improved. Laboratory conditions have been modified to resemble the real environment. The production process has been reviewed by the manufacturing department. Measurement results based on the industrial field are listed in the following table:

Table 6. Measurement Results Level 5

Level 5 Values	Construction materials	Expertise	Food	Textiles
30%	1		1	
60	1		2	
100%		4		5
Total	2	4	3	5

Source: Tekno-meter results, 2025

f. Level 6

Research and development are actively underway. These R&D activities involve analytical and laboratory studies to validate physical analytical predictions about various technological elements. Actual operating environment conditions are identified. Investment requirements for equipment and manufacturing processes are identified for the performance of the technology system in the operating environment. The manufacturing department approves and accepts the laboratory test results. Prototypes have been tested with high laboratory accuracy in a simulated operational environment. Test results are proven to be technically feasible. Measurement results according to industry sector are listed in the following table:

Table 7. Level 6 Measurement Results

Level 6 Values	Expertise	Textiles
30	1	
60	1	
100%	2	5
Total	2	5

Source: Tekno-meter results, 2025

g. Level 7

This prototype is aligned with the operational system plan. This situation reflects the TRL 6 development steps that require demonstration of a real system prototype in an operational environment. Equipment, processes, methods, and engineering designs have been identified. Equipment manufacturing processes and procedures are being tested. Test equipment is being tested in a production environment. Design drawings have been completed. Equipment, processes, methods, and engineering designs have been developed and are being tested on a larger scale. Cost estimates have been validated. The manufacturing process is generally well understood. Almost all functions can run in specific operational environments/conditions. A complete prototype has been demonstrated in operational simulations. The system prototype has been tested in field trials. Ready for initial production. Measurement results by industry sector are shown in the following table:

Table 8. Measurement Results Level 7

Level 7 Values	Expertise	Textiles
60	1	
100%	1	5
Total	2	5

Source: Tekno-meter results, 2025

h. Level 8

The technology has been proven to function in its final form and under expected conditions. In general, this TRL reflects the end of actual system development. The form, suitability, and function of its components are compatible with the operating system. Machines and equipment have been tested in a production environment. The final diagram has been completed. The manufacturing process has been tested on a pilot scale.

Volume 09, Number 03, Page 1831-1839
e-ISSN: 2598-120X; p-ISSN: 2598-117X

Manufacturing process tests show acceptable results and productivity levels. All functions have been tested in a simulated operating environment. All materials and equipment are available for use in production. The system meets qualifications through testing and evaluation. Ready for full-scale production. Measurement results based on industry sector can be seen in the following table:

Table 9. Measurement Results Level 8

Level 8 Values	Skill	Textiles
60	1	
100%		5
Total	1	5

Source: Tekno-meter Results, 2025

i. Level 9

The actual application of the technology has reached its final form and is in the planned condition, such as in operational testing and evaluation. In general, this is the final part of the improvement efforts in the actual system development, for example, the use of the system in operational mission conditions. The operational concept has been implemented. Technology investment estimates have been made. There are no significant design changes. The technology has been tested under actual conditions. Productivity is at a stable level. All documentation is complete. Production cost estimates compared to competing technologies are known. Measurement results by industry sector can be seen in the following table:

Table 10. Measurement Results Level 9

Level 9 Value	Textiles
100%	5
Total	5

Source: Tekno-meter Results, 2025

Industry-Based Evaluation Results

The discussion was conducted in the industrial technology category by presenting information on value achievement.

a. Construction Material Production Technology

1) Level 1 – Level 3
The calculation results for Levels 1 to 4 in the construction materials industry each have a value of 100%. From these results, it is evident that the majority of SME businesses in the construction materials industry are currently capable of producing under current conditions.
2) Level 4
Two out of three samples meet the Level 4 indicators. The construction materials industry has reached the basic level. This indicates the need to identify the type of basic research required to establish partnerships for developing synergistic SME products.
3) Level 5
There are 2 out of 3 samples that meet the Level 5 indicators. The construction materials industry has reached the basic level.

b. Craft Production Technology

1) Level 1 – Level 5
The results of the calculations for levels 1 to 5 for the food industry are each 100%. From these results, it can be seen that the MSME business unit samples in the craft industry sector have been able to produce under current conditions.
2) Level 6
One out of four samples met 30% of the level 6 indicators, two out of four samples met 60% of the level 6 indicators, and one out of four samples met 100% of the level 6 indicators. At this level, the craft industry has reached a basic level that can meet local needs.
3) Level 7
There is 1 out of 2 samples that meet 60% of the Level 7 indicators, and 1 out of 2 samples that meet 100% of the Level 7 indicators. At this level, the handicraft industry has reached a basic level that can meet local needs.
4) Level 8
One MSME business unit in the craft industry meets 100% of the level 8 indicators. At this level, the craft industry is able to meet regional demand.

c. Food Production Technology

1) Level 1 – Level 3
The results of the calculations for levels 1 to 3 for the food industry are 100% each. From these results, it can be seen that most MSME business units in the food sector are able to produce under current conditions.
2) Level 4
The total sample meets the Level 4 indicators. At this level, the food industry has reached the basic level. There is a need to identify the type of basic research required to establish basic research partnerships.
3) Level 5
Two out of three samples meet the Level 5 indicators. At this level, the food industry has reached a basic level.

d. Textile Production Technology

1) Levels 1-9
The results of the calculations for all samples meet the level 9 indicator by 100%. At this level, the industry has been able to meet national scale needs.

The basic level achieved by MSME business units in terms of TRL requires follow-up in efforts to increase production output. Follow-up for levels 1 to 3 is as follows:

a. The need to identify the type of technology applied, namely community technology or appropriate technology. This identification effort can be carried out by establishing partnerships with relevant stakeholders. Ipop Abdi Prabowo, (2025) and Wanda Marsa Widyani, (2013) states that based on research, cooperation has several benefits, namely as follows: 1. Cooperation encourages competition in achieving goals and increasing productivity. 2. Cooperation encourages individual businesses to work more productively, effectively and efficiently. 3. Collaboration fosters synergy, thereby reducing operational costs and increasing competitiveness. 4. Collaboration fosters harmonious relationships between relevant parties and enhances solidarity. 5. Collaboration creates healthy practices and improves group morale. 6. Cooperation

Volume 09, Number 03, Page 1831-1839
e-ISSN: 2598-120X; p-ISSN: 2598-117X

encourages participation in the situations and conditions that occur in the environment, so that individuals will automatically participate in maintaining and preserving good situations and conditions.

b. Community technology can still be utilised because it is part of local wisdom that stems from the ability and capacity of MSMEs to increase production through the creation of their own technology. Technology today continues to develop rapidly. Salsabila et al.,(2025) and Faisal Tamimi,(2024) , say that technological developments must be balanced with local wisdom. Thinking based on local wisdom needs to be synergised with ongoing developments. This is because local wisdom contains traditional cultural values. The presence of technology can eliminate local wisdom itself. Thus, synergy between local wisdom and technology is imperative. If appropriate technology is needed, it can be coordinated with ministerial and non-ministerial research institutions, state-owned enterprises (BUMN), and universities. Ariesty et al., (2020) sees the benefits of cooperation as follows: 1. Productivity benefits. 2. Efficiency benefits. 3. Benefits of quality, quantity, and continuity assurance. 4. Benefits in terms of cooperation risks essentially indicate an agreement between two or more parties that is mutually beneficial, with both parties contributing or playing a role in accordance with their respective strengths and potential, so that the benefits or losses obtained or suffered by both parties are proportional. This means that they are in accordance with the respective roles and strengths of each party.

c. Establishing the function of "implementing partners" by sharing organisational resources. (Saparuddin M & Basri Bado, 2011) states that based on research, cooperation has several benefits, namely: 1. Cooperation encourages individuals to work more productively, effectively, and efficiently. 2. Cooperation encourages synergy, thereby reducing operational costs and increasing competitiveness. Measurement results show that the same technology field has varying (better) measurement results, enabling technology transfer through mediation facilitated by the government.

Umiyati & Achmad,(2021) found that small businesses often experience difficulties in adopting new technologies due to limited resources and difficulties in managing rapidly developing technological changes. With these limitations, small businesses need to foster a culture of learning to improve their ability to adopt new innovations that have an impact on increasing competitiveness. Small businesses will be able to utilise new innovations to increase competitiveness if they have the capabilities and competencies to utilise what they have learned. Therefore, the knowledge transfer process is important in increasing the capacity to absorb information and adopt new technological innovations.

In the TRL measurement, two (13%) business units were found to be at level 4. From these results, it can be explained that these two MSME business units use appropriate technology based on their experience in production. These two business units are in the food and building materials industries.

MSME business units with intermediate levels (levels 4 to 6) also require follow-up. The follow-up for levels 4 to 6 is as follows:

a. Identification of the type of technology applied, namely community technology or appropriate technology. If the community technology used is adequate in the production process, guidance is needed at the supporting level (management, post-production, and human resources) (Lubis, 2016) . Training and development are useful for the long-term careers of employees to help them face greater responsibilities in the future. This programme is not only beneficial to individual employees but also to the organisation. Training and development programmes are important activities and are used as an organisational investment in human resources. If appropriate technology produced by R&D is used, technical assistance is needed to use the tools. Khairandy, (1996) states that technical assistance is needed to support the smooth transfer of technology.

b. Building partnerships is a necessity. Amanda Carolina Lakoy,(2015) has conducted research entitled The Influence of Communication, Group Cooperation, and Creativity on Employee Performance at the Aryaduta Manado Hotel. Based on the results of the analysis, this study successfully proved that cooperation has a positive and significant influence on performance. These partnerships are:
    1) Partnership in the implementation of activities. The implementation partnership referred to is a partnership carried out for the production process. Things included in the implementation of partnership activities include cooperation in the provision of raw materials and training in the use of more modern technology. In this case, closer collaboration is still needed to build synergy in product manufacturing towards a higher level of technological maturity. Synergy is important. This is as stated by Triana Rahmawati, Irwan Noor,(2013) , who define synergy as a combination or blend of elements or parts that can produce better and greater output. Thus, synergy can be understood as a joint operation or fusion of elements to produce better output. Synergy can be built in two ways, namely communication and coordination.
    2) Partnerships in the utilisation of R&D products (production equipment). These partnerships are established with technology/machine providers. These partnerships are one form of support for innovation development, so that the production equipment that has been created can be utilised.

According to Iin Surminah,(2013) , in order to produce products that are in demand in the market, cooperation in research and development activities is absolutely necessary, because almost all stages of research and development activities require skills and expertise from more than one discipline. According toTrina Fizzanty, Kusnandar, Dini Oktaviyanti & Radot Manalu,(2013) , research collaboration provides many benefits for the institutions and R&D partners involved, such as sharing costs and risks, gaining access to

Volume 09, Number 03, Page 1831-1839
e-ISSN: 2598-120X; p-ISSN: 2598-117X

necessary resources, improving the capabilities or competencies of research resources and institutions, and expanding work networks. An incubation programme for research and development products needs to be prepared. Rudi Hardiansyah,(2019) states that an incubator institution is an institution that plays a role in developing products from an early stage. The creation of harmonious prototypes supports partnerships facilitated by relevant stakeholders.

Identification of Enabling and Hindering Factors for Kebumen Youth in Performing Their Roles and Participation in Their Surrounding Environment

The development of business units provides benefits in the form of employment absorption in the surrounding environment. The development of a business cannot be separated from its driving factors. The driving factors referred to in this study are factors that contribute to the development of youth businesses in Kebumen Regency. The driving factors are: 1) the availability of abundant raw materials, 2) the use of tools that can produce, and 3) sufficient marketing opportunities for products.

The inhibiting factors referred to in this study are factors that inhibit and complicate the development of youth businesses in Kebumen Regency. In general, the obstacles faced in managing businesses in Kebumen Regency are: 1) limited capital, which prevents business actors from freely choosing the technology to use, 2) marketing difficulties due to the inability to utilise technology, 3) low innovation capabilities, and 4) numerous competitors.

Developing strategies to optimise the role of Kebumen youth in the economic development process in the era of the 5.0 industrial revolution

To enable respondents to optimise their business management, it is ideal to address every significant obstacle and challenge. The following are strategies that can help respondents overcome existing obstacles.

1. The main problem is the respondents' limited financial capital, which means that business actors are not free to choose the technology they use. The government has provided a solution in the form of People's Business Credit (KUR), but many start-up entrepreneurs are unable to access KUR due to collateral constraints. As summarised by CNNIndonesia.com from state-owned banks that distribute KUR, in order to enjoy these facilities, business actors must meet several requirements. First, the debtor must be an Indonesian citizen (WNI) and must have been running a business for at least six months. Second, they must prepare complete documents, such as a photocopy of their ID card, family card (KK), a photocopy of their marriage certificate for those who are married, a business licence or a business certificate from the village/sub-district. PT Bank Negara Indonesia (Persero) Tbk even applies special requirements for KUR borrowers, such as the obligation to attach collateral documents for loans above IDR 25 million and to attach a Taxpayer Identification Number (NPWP) for loans above IDR 50 million. The government is advised to review the KUR loan requirements. In addition, MSMEs can collaborate with other parties to invest in their companies. It is also recommended to establish partnership programmes with larger companies. Deputy for Human Resource Development at the Ministry of Cooperatives and SMEs, Rulli Nuryanto, said that one of the strategic steps in empowering and developing cooperatives and MSMEs is to build and develop partnerships with large industries. Partnerships are important for two reasons. First, no entity can survive and thrive on its own in an increasingly globalised era. Second, it is related to the 4.0 industrial revolution, which is characterised by the development of information technology.
2. The second problem is difficulty in marketing. Susantiningrum,(2018) in a study conducted proved that marketing management carried out by MSMEs is still low. One of the causes of marketing difficulties in Kebumen is the inability of business units to utilise technology. This problem can be overcome by providing training to respondents on marketing and e-commerce strategies. Global marketing opportunities will not be felt if they are not balanced with the skills of partners in utilising internet technology to market their products, for example through web-based e-commerce applications, (Solechan & Natalistyo, 2011) . Web-based e-commerce will be the solution to the problem of difficult product marketing. In addition, e-commerce will benefit consumers (Amalia et al., 2021) . Therefore, online marketing training is very important. After the training is carried out, it is necessary to provide assistance to respondents in applying the training material. The assistance process can be carried out within a certain period of time, for example one month. During this period, monitoring and evaluation need to be carried out to ensure that the knowledge conveyed in the training is implemented.
3. Low innovation capability. Putra & Kusumadewi, (2019) successfully proved that product innovation has a significant influence on repurchase intention. Low or infrequent innovation makes consumers feel bored and reluctant to use the product again in the future. The impact is a decline in sales. Low levels of innovation are generally caused by limited knowledge or insight in creating a product. The solution is to provide training and encourage them to increase their knowledge about similar products. Trawardani et al., (2015) successfully proved that training has a significant influence on ability.
4. Number of business competitors. Ahmad Ali Syahbana,(2008) successfully proved that the intensity of competition has a significant effect on service-based business strategies. The large number of business competitors gives consumers many choices and allows them to select the best products at competitive prices. This situation has a negative impact on companies that are less adaptive. Competition is inevitable, so the best solution is to improve the ability to create superior products. Training, research, and development are essential. Implementing the right marketing strategy is also one of the solutions offered. Wibowo & Zainul Arifin,(2015) state that developing a marketing strategy is crucial. Every company must determine the appropriate marketing strategy to maximise product sales. Marketing strategy is one way to achieve

sustainable competitive advantage, whether for companies producing goods or services. Marketing strategy can be viewed as one of the foundations used in developing a well-thought-out business plan. This can begin with conducting training for business managers.

IV. CONCLUSIONS

Based on the results of this study, it can be concluded that: MSMEs in Kebumen Regency include businesses in building materials, foodstuffs, handicrafts, and textiles. The results of the evaluation and measurement of the TRL of MSMEs in Kebumen Regency show that all samples have passed the measurement at levels 1 to 3. There are 2 MSMEs that have achieved 60% of level 4 indicators; 2 MSMEs achieved 30% of level 5 indicators; 3 MSMEs achieved 60% of level 5 indicators; 1 MSME achieved 30% of level 6 indicators; 1 MSME achieved 60% of level 6 indicators; 1 MSME achieved 60% of level 7 indicators; 1 MSME achieved 60% of level 8 indicators; and 5 MSMEs achieved 100% of level 9 indicators. This indicates that SME production in Kebumen Regency requires government intervention in the utilisation of appropriate technology, as well as management and human resources. Based on the conclusions drawn, the recommendations that can be presented in this study are: It is important to identify the type of technology applied, namely community technology or appropriate technology. This effort can be carried out by establishing partnerships with relevant stakeholders. If appropriate technology is required, it is recommended to coordinate further with ministry and non-ministry research institutions, State-Owned Enterprises (SOEs), and universities. Build partnerships by sharing organisational resources from businesses in the same industry. The government reviews the requirements for KUR loans. The government is conducting training on marketing strategies and e-commerce.

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