

## Scale Up Strategy of Smoked Fish Home Industry Using AHP and SAST A Case Study in Kendal District, Central Java Indonesia

Nugroho Budi Satrio Sukamdani<sup>1</sup>, Kholil\*<sup>2</sup>

<sup>1</sup>Post Graduate School Sahid University, Jakarta

<sup>2</sup>Faculty of Engineering Sahid University, Jakarta

Corresponding Author: [kholil@Usahid.ac.id](mailto:kholil@Usahid.ac.id)

*Received: July 2021 | Revised: December 2021 | Accepted: December 2021*

### Abstract

Smoked fish is one of the most potential home industry in Kendal Regency in Central Java Province. It has a big impact to family economic development for poor people, and able to absorb a very large workforce. Although its role is very significant, the government's attention is still very limited, and most of their lives are still not prosperous. The purpose of this research is to develop a business scale up strategy in accordance with objective of home industry entrepreneurs condition using the SAST and AHP method. The results of the study showed that government's support and policy through guarantee of raw materials is the most important factors for ensuring sustainability of smoked fish home industry, while to increase their business scale product diversification is the most appropriate strategy. There are two actors who have a big role in the development of smoked fish home industry in Kendal Regency, Regional Planning and Development Agency and Regional People Representative Council.

**Keywords:** Home industry, Smoked fish, Gender responsive, Welfare, SAST, AHP

**JEL Classification:** I38

**How to Cite:** Sukamdani, N. B. S., Kholil, K. (2021). Scale Up Strategy of Smoked Fish Home Industry Using AHP and SAST A Case Study in Kendal District, Central Java Indonesia, 22(2), 274-282. doi:<https://doi.org/10.23917/jep.v22i2.15254>

**DOI:** <https://doi.org/10.23917/jep.v22i2.15254>

### 1. Introduction

Home industries (HI) have major role in economic and welfare development of the people in Indonesia. There are expected 64 million of home industry with total work force of more than 117 million (KPPA, 2014; KUKM, 2020); according to Saturwa et al. (2021) home industry is one of the MSMEs that is not affected by Covid 19 pandemic, while Amri (2020) stated only a few MSMEs that are still surviving in the time of Covid 19 pandemic. Kendal Regency which is located on the north coast, has been designated as a home industry pilot project development by the government of Indonesia since 2012 in accordance with the superior potential of sea-based products of coastal areas. One of the most potential home

industries based on the geographical position of Kendal Regency is smoked fish (Agus et al. 2020; Bappeda Kendal, 2018). Responsive gender mean that policy, programs, and activities are associated with difference of men and women (Kholil et al. 2016; Susiana, 2015)

Almost all of home industries are managed by women especially for home industries in the beginner level. This means that women have great potential to develop family economics. Home industries is an industry that employ fewer than six people, limited capital, and integrates with household activities, and all of workers are family (Kholil et al. 2016; Marlow et al. 2013; Kholil et al. 2017; Endang, 2013). All of business activities are carried out by women, and integrated into

household activities, and there is no separation of management between household finances and business finance (Rosa et al. 2018; Bradshaw et al. 2015).

Fish smoking is a method of processing or preserving fishery products using heat and natural chemical compounds imparted from burned wood or other natural materials. The burning process will generate smoke, and it will be absorbed into the fish, producing a distinctive aroma and flavor for the fishery products, with appetizing brownish or golden yellow color. In addition to producing a distinctive aroma and flavor, the smoking process can also extend the shelf life of fishery products. This is because the chemical compounds from the smoke can act as antioxidants, even in low concentrations. The longer the smoking duration of the fish, the more chemical compounds formed during the wood burning process, resulting in the longer shelf life of the fish. It is one of the processed fishery products that is most favoured by consumers both in Indonesia and abroad for its distinctive taste and aroma.

The main of current problems meet by smoked fish home industry are limited skills and technology, and very limited access to market, this become an obstacle for the business to develop. The objective of this study is to develop the most appropriate strategy to increase business scale of smoked fish home industry in accordance with real condition faced by business actors. This result is very necessary and will be used as an input for local government to conduct guidance and scale up the business according to the object conditions.

Home industries (HI) have major role in economic and welfare of family. One of the most important roles is absorbtion a very large workforce, to reduce unemployment. Almost all home industries are managed by women especially for beginner. There are some characteristics of Home industries : (a) limited capital, (b) run by women as subcontracting workers or homeworkers and family labor, but their participation rarely recognized, (c) low wage (Kholil et al. 2016; Marlow and Mcadam, 2013; Bradshaw et al. 2015). Smoked fish home industry is one of the most potential home industry in Kendal regency, because this industry has developed in almost

parts of Kendal district, especially for those who live in coastal area (Bappeda Kendal, 2018).

Smoked fish home industry has expanded extensively in Kendal, with around 15,000 businesses with an average workforce of 3 women. Although the number is quite large and they do contribute to the absorption of labour, their quality of life has not improved yet. The business activities being passed on from generation to generation do not exactly develop for the better. The average income per month is only around IDR 1.5 million-2 million. Some of the problems of current home industry include: (1) limited capital, (2) low quality of human resources, (3) limited facilities and technology, (4) limited market access (KPPA, 2014), while according to Syarifah, Mawardi, and Iqbal (2020), stated that human capital affect to market orientation and performance of MSME. Even the behavioural factors of women as entrepreneurs also determine the development of home industry (Nobari et al.2014; Husain, Li Xiao Xiao, 2016), while Darmawan (2019) stated that motivation and professionalism are the two important aspects to develop the business.

There are 3 groups of smoked fish home industry in Kendal Regency: (1) starters; (2) developers and (3) advanced. Starter group and developer group are similar. The two things that distinguish them from one another is the scale and the turnover of their business. The starter group earnings can reach IDR 15-20 million; while developer group can reach up to IDR 25-40 million. But the characteristics are identical, including: simple technology, home-based activities, and limited facilities for the workers who are mostly women. The advanced group is characterized with: (1) already using modern technology, (2) offering product diversification, (3) marketed using information/digital technology, (4) already using banking services; and (5) average turnover reaching up to 100 million/month. Most (85%) of the home-based smoked fish businesses in Kendal are included in the starter group, followed by developer group (12%), and advanced group (3%), Bappeda Kendal, (2018). The role of the smoked fish home industry in family economic development is very large; especially for labor absorption, and

income, therefore it needs to be developed in order to improve the welfare of the community, especially for fishing communities (Sandrasari, et al. 2018; Bappeda Kendal, 2018). Research by Anggraeni, Hardjanto, and Hayat (2015) stated there are 4 important aspects to improve business scale of home industries: (1) capital assistance; (2) innovation (3) marketing network expansion; (4) facilities and infrastructures development, While the research conducted by Ilyas and Rakib, 2017 added two other important thing, promotion and market penetration.

## 2. Research Method

This is an expert-based study combined with field study, aiming to see the objective conditions directly. Experts selected as the sources include: (1) Policy makers/regional government; (2) academics, (3) home industry experts; and (4) business people. Data analysis

uses SAST (Strategic Assumption Surfacing and Testing) and AHP (Analytical Hierarchy Process). SAST is a method used to identify what strategic assumptions should be given attention in the development of the business scale of home-based smoked fish industry. While AHP is used to choose the best strategy to increase business scale according to objective conditions. There are 24 people who were interviewed, 7 people represent the expert group (government 2, academics 1, home industry expert 2 and business expert 2), while 17 people represent the home industry business actors.

## 3. Results and Discussion

### 3.1. Results

Based on field study results, there are 3 type of home industry of smoked fish: Beginner, Developing and Developed, and their characteristics are as follows:

**Table 1. Characteristics of Smoked Fish Home Industry Base on Groups**

Factor and Benchmark	Parameter		
	Home industry Beginner/Startup	Home industry Developing	Home industry Developed
<b>A. HUMAN RESOURCES FACTORS</b>			
1. Entrepreneur/Manager /Owner	F (1-2), M (0)	F (2-5), Male (0)	F (3-5), M (1)
2. Part Time Worker	F (0-2), M (0-2)	F (2-5), M (2-5)	F (5-10), M (5-10)
3. Full Time Worker	F (1), M (0)	F (1-5), M (0-3)	F (3-10), M (3-5)
<b>B. CAPITAL FACTORS</b>			
1. Own capital	Plenty (80-100%)	Some (0-40%)	Few (0-10%)
2. Loans from relatives/ colleagues	Some (0-20%)	Some (0-40%)	Few (30-80%)
3. Revolving fund/and State/ Local Budget Reinforcement	None	Plenty (20-60%)	Few (0-30%)
4. Cheap Credit	None	Few (0-20%)	Some (20-60%)
5. Banking Credit	None	None	Plenty (40-80%)
<b>C. PRODUCTION FACTORS</b>			
1. Technology Application	Very Simple	simple	Modern
2. Implementation of GMP	no	no	yes
3. Raw Material Provision	Irregular	Regular	Stock
4. Process Management	Unstructured	Semi Structured	Structured
5. Business Administration	Manual	Semi - electronic	Electronic
<b>D. BUSINESS FACTORS</b>			
1. Raw Material Market	Unpredictable	Fluctuating	Predictable

Factor and Benchmark	Parameter		
	Home industry Beginner/Startup	Home industry Developing	Home industry Developed
2. Production Cost	Uncounted	Recorded	Recording and Counted
3. Selling Price	Unpredictable	Fluctuating	Periodic Certainty
4. Profit Estimation / Income Per Period	IDR 1.5-2.0 million/month	IDR 2-3 million/month	IDR 5-10 million/month
5. Minimum Feasibility	Breakeven	B/C: 1.2 – 1.5	B/C: > 1.5

Description: - M: Male; - F: Female; -B/C ; Benefit Ratio

The above table shows that each groups has the following characteristics : (1) beginner: 1-3 workers; managed by woman, owned capital 100 %, very simple technological process; and monthly income IDR 1.5-2.0 million. (2) developing groups: 3-5 workers, 30-50 % of the man workers; maximum 40 % owned capital, simple technological process, and monthly income IDR 2.0-3,0 million, and (3) developed: 5-10 workers; dominated by man workers, owned capital 10 %, use modern technological process; and monthly income IDR 5.0-10.0 million. These characteristics showed that the main differentiators each group are labor, process technology, capital owned and income. The higher level of groups the smaller of women role, this results support Anderson et al. (2018), that Women management is very dominant for micro enterprise. Another interesting finding of this research is the ownership of capital which shows the higher of level groups the smaller of capital owned.

Field analysis results showed that actually 93 % of smoked fish home industry are beginner, 5 % developing and only 2 % developed. This mean that most of smoked fish home industry only enough to survive, with 1.5-2 million / month only they can't do more for their future. To increase of their business and income government's role is needed especially for the beginner groups.

Generally, the production process starts from raw materials cleaning, burning, packaging

and marketing. For the beginner groups most of activities are done traditionally by female workers, while the burning process which need a lot of energy are done by men. After burning process which takes 6 hours, there is no special packaging. The product traditionally delivered to customers directly by the producers on motorbikes, or through collectors. They sell IDR 150 thousand each pack with 10 smoked fish; while from collector traders is IDR 155 million, and from traders to customers is IDR 160 million. The value chain of raw materials and product distribution is explained figure 1.

Most of smoked fish business actors said that sustainability and guarantee of raw materials are the main problems, so they are not sure whether their business will continue, therefore the role of the government to ensure the availability of raw materials is very important, through cooperation with the surrounding government (Semarang, Demak, Pekalongan).

To increase producer income government intervention is needed, especially for marketing product. To avoid price competition between business actors, it is necessary to build a cooperative institution, as a forum for business traders to collaborate and synergize, both in the procurement of raw materials and product sales. This institution can also be a matching institution between producers and buyer.

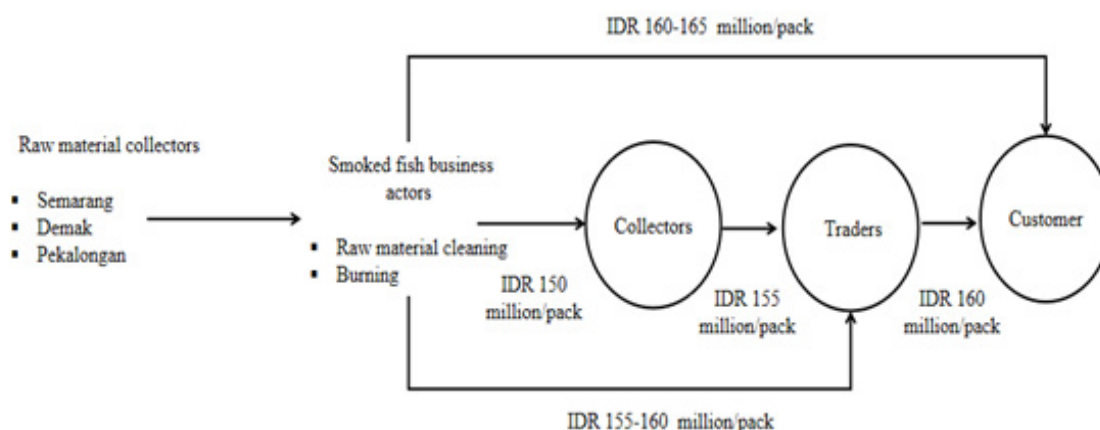


Figure 1. Value chain system of smoked fish in Kendal Regency

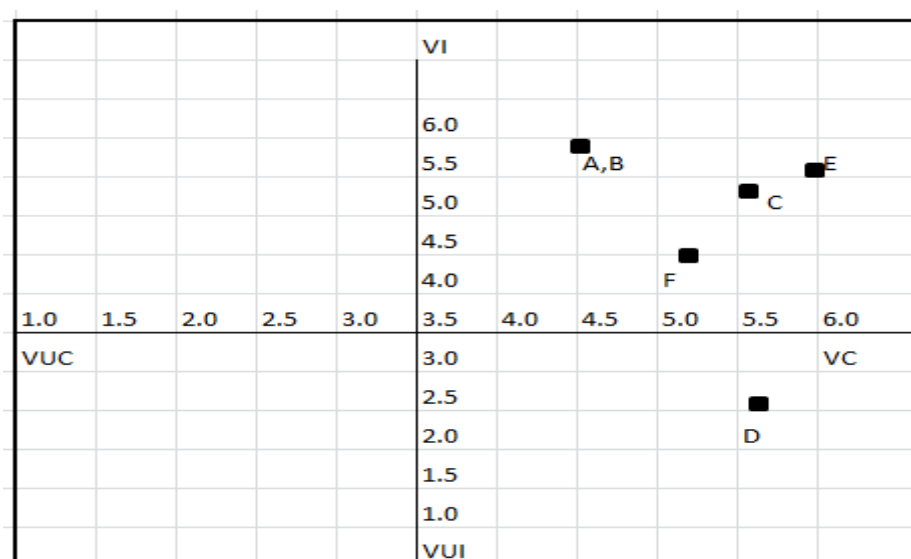


Figure 2. The strategic assumption for increasing the scale of home-based smoked fish industry

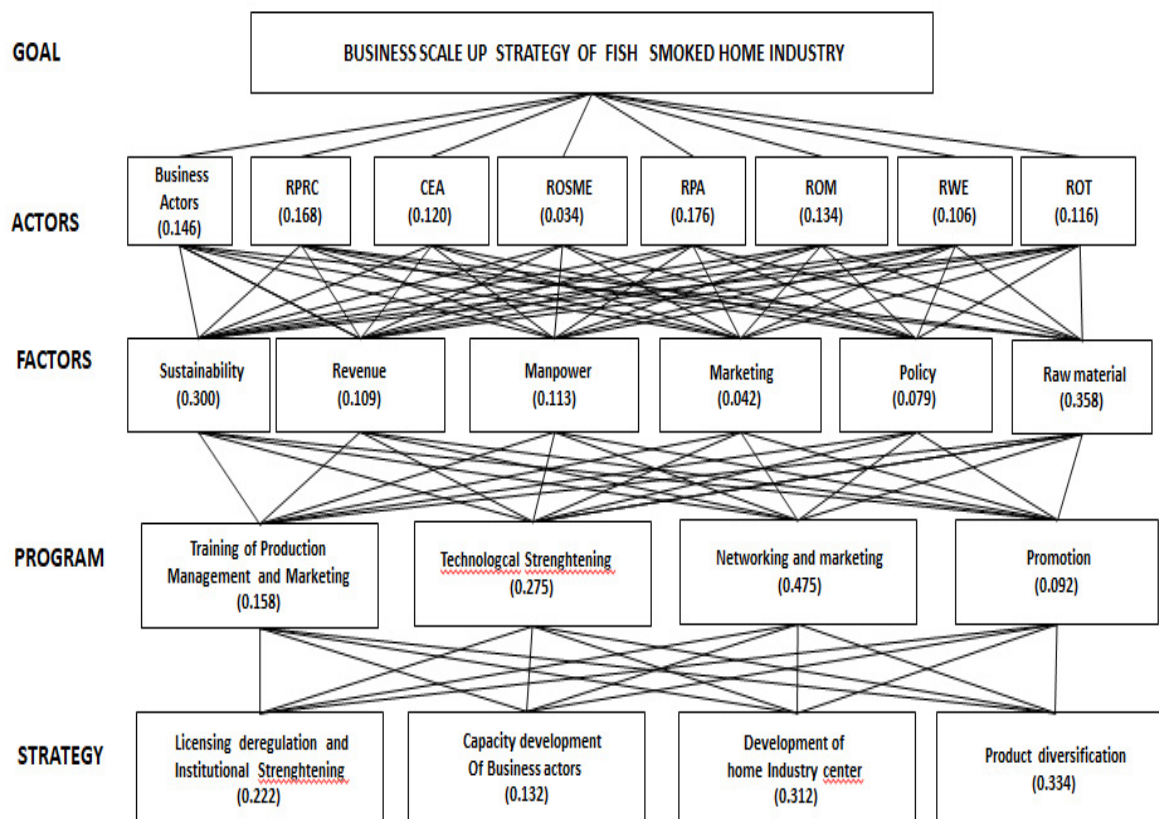
Description: VI: very important; VUI: very unimportant; VC: very certainty; VUC: very uncertainty

To increase the scale of business of home industry business actors, based on expert interviews there are 5 aspects that must be considered: Government policy (A), manpower skill (B); capita support ©; market (D); raw material (E), and infrastructure (F). The result of SAST analysis shows that raw materials availability (E) is the most important factor and must be guaranteed, and then the government policy support (A), and man power skill (B), as explained in the following figure 2:

There are 4 important aspects regarding scale up the business of smoked fish: actors,

factors, programs, and strategy. Based on experts' discussion and analysis results using AHP, the most appropriate strategy to increase business actors' income as figure 2 follows:

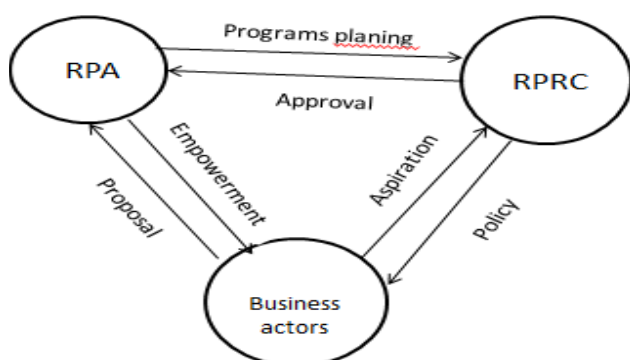
The figure 3 above shows that RPA (0.176) is the most important institution for increasing the business of smoked fish home industry, and then followed by RPRC (0.168) and Business Actors (0.146). According to their functions, RPA's role is needed to plan the budget for developing smoked fish home industry, while RPRC to support its legality.



**Figure 3. The strategy to increase the business of smoked fish home industry**

Descriptions: RPRC (Regional People Representative Council); CEA (Center of Empowerment Agency); ROSME (Regional Office of Small Business Enterprises); RPA (Regional Planning Agency), ROM (Regional Office of Marine); RWE (Regional Women Empowerment) and ROT (Regional Office of Trade)

The relationship between business actors, RPA and RPRC is a triple helix collaboration as figure 4 follows:



**Figure 4. Triple helix collaboration of RPA, RPRC and the business actors**

There are 3 priority factors for increasing the scale of business of the fish smoking home industry: raw material availability (0.358), sustainability of business activities (0.300) and manpower (0.113). Raw materials availability is the main factor, because without raw materials the activity of the business stopped. Sustainability is important thing so that the family's economic support is guaranteed, as well as manpower skills to increase business scale. Networking and marketing (0.475) are priority programs that must be carried out to support the sale of their products through capacity development (training) or construction traditional market facilities.

Based on multiple criteria of actors, factors and programs; the result of AHP analysis (Figure 3) shows that product diversification (0.334) is the most appropriate strategy to increase business

scale and the income of business actors. Product diversification strategy will drive the number of productions to increase, therefore encouraging an increase of their turnover and income.

### 3.2. Discussion

From the analysis we can see that there are two key factors to improve business groups, both from beginners to developing and from developing to developed; namely Human Resource and technology. For the beginners and developing groups with limited skills it is difficult to manage and develop their business, as well as technological limitations it will also be difficult to increase their productivity so their business and income do not grow. Therefore, government intervention through development of BDS (Business Development Center) or center of excellence is important to become a place of training or consultation for beginners and developing groups. Thus capacity development is very thing to build self-efficacy (Deliana, K.Rahardjo, T.W. Afriyanti, 2019). Capacity development for business actors and technological use will be meaningless if there is no guarantee of business continuity. Therefore, the guarantee of raw materials through co-operation and collaboration with surrounding areas such as Semarang, Demak and Pekalongan must be carried out by the government. This is the affirmative policy of the government that must be taken to increase their business scale and income.

Capacity development of business actors and utilization of technology, will also enable business actors to diversify their products as a strategy for business expansion and development. So, product diversification as a priority strategy to increase their business scale and income will be realized.

Regional Planning Agency's (BAPPEDA) role is very important in developing of smoked fish home industry. Home industry is under the department (Dinas) of Industry and Trade office (INDAG), but the activity plan to be implemented is determined by BAPPEDA, because Bappeda is the official institution that approves or rejects the activity plan which is proposed by the INDAG as well as RPRC (DPRD) for budgeting.

### 4. Conclusion

Raw materials availability is the most important thing and must be guaranteed by the government for ensuring sustainability of the business. The Regional Planning Agency (RPA) and the Regional People Representative Council (RPRC) are the two very important institutions to support scale up the business, while the most appropriate strategy to increase business actors' income is product diversification.

Limitation of this research is the analysis is still unable to determine the priority of policy support from the government to increase the beginner groups to developing, and the developing to developed groups.

### 5. Acknowledgement

The author expresses his gratitude to everyone who have helped this study, especially to the Ministry of Research of Higher Education for funding support for research activities. Thanks also to the Kendal Regency Government for giving the permission for the research, and all experts and business people who have contributed inputs in the research activities.

### 6. References

- Agus, M., Titik, H., Oktaviani A. S., Novika W. (2020). Peningkatan Kualitas dan Kapasitas Produksi Ikan Asap Melalui Sistem Paparasi (Pengasapan Terintegrasi) di Desa Tambaksari, Kecamatan Rowosari, Kabupaten Kendal, Jawa Tengah. *Jurnal Pengabdian Masyarakat MIPA dan Pendidikan MIPA*. 4(1), 1-5.
- Amri, A. (2020). Dampak Covid 19 terhadap UMKM di Indonesia. *Jurnal Brand*, 2(1), 147–153
- Andersson, F.W., D Johansson., J. Karlsson, M. Lodefalk, A. Poldahl. (2018). Female Top Management in Family Firms and Non-Family Firms: Evidence from Total Population Data *International Journal of Entrepreneurship and Small Business*. 35(3), 303-326.

- Ana, H. (2014). Fungsi dan peran representative Dewan Perwakilan Daerah dalam Sistem Otonomi. *Jurnal Ilmiah FENOMEA*, 12(1), 1147-1156.
- Anggraeni, F.D., Hardjanto, I., Hayat, A. (2015). The Development of Micro, Small and Medium Enterprises through the Facility of External and Potential Internal (Case Study in Business Group "Emping Jagung" in Pandanwangi Village - Blimbing Malang District. *Jurnal Administrasi Publik (JAP)*. 1 (6), 1286-1295
- Bapeda Kendal. (2018). Laporan Tahunan Pemerintah Kabupaten Kendal tahun 2017. Pemda Kendal: 23-25.
- Bradshaw, J., Castellino and Diop, B. (2015). Women's Role in economic dDevelopment: Overcoming the Constranits. Sustainable Development Solution Network. Global Initiative for The United Nation
- Darmawan, D. (2019). Profosionalisme, Motivasi Berprestasi, Komitmen Organisasi dan Pengaruhnya Terhadap Intensi Berusaha. Ekuitas: *Jurnal Ekonomi dan Keuangan*. 3(3), 344-364
- Deliana, M., K. Rahardjo, T.W., Afriyanti. (2019). Influence of Business Education on Entrepreneurial Intention with Feasibility and Entrepreneurial Self -Efficacy as Intervening Variables. *Jurnal Bisnis dan Manajemen*. 20(2), 125-135 DOI: <http://dx.doi.org/10.24198/jbm.v20i2>
- Endang, S. (2013). Peran Serta Perempuan Dalam Pengelolaan Usaha Dagang Kecil dan Menengah (UDKM) di Jawa Tengah. *Media Ekonomi dan Manajemen*. 27(1), 13-18
- Husain., Xiao Xiao, Li (2016). The Antecedents of Women Leadership in SMEs: The Malaysian Senior Female Managerial Perspective. *International Journal of Business and Management*. 5 (11), 179-2010
- Ilyas and M. Rakib. (2017). Micro Small and Medium Enterprise Development Strategy in Power Economic Development: Case Study on Maros Bread Enterprise in Maros District. *Sosiohumaniora*. 19(2), 114-120
- Syarifah, I., Mawardi, M.K., Iqbal, M. (2020). Pengaruh Modal Manusia terhadap Orientasi Pasar dan Kinerja UMKM. *Jurnal Ekonomi dan Bisnis*. 23(1), 69-96.
- KPPA. (2014). Home Industries Prospect and Challenges in Indonesia. Ministry of Women Empowerment and Child Protection Republic of Indonesia. Jakarta, Indonesia.
- KUKM. (2020). Data Perkembangan UMKM (2018-2019). Kementerian Usaha Menengah Kecil dan Mikro. Jakarta; available at [https://www.kemenkopukm.go.id/uploads/laporan/1617162002\\_SANDINGAN\\_DATA\\_UMKM\\_2018-2019.pdf](https://www.kemenkopukm.go.id/uploads/laporan/1617162002_SANDINGAN_DATA_UMKM_2018-2019.pdf)
- Kholil., Sukamdani, N.B. (2016). Model Development of Home Industries to Increase Business Scale Using Analytical Hierarchy Process (AHP): A Case Study in Kendal Regency, Central Java Indonesia. *British Journal of Economics, Management & Trade*. 15(2), 1-8
- Kholil, Sulistyadi.K and Sandra, D.A (2017). Gender responsive of Micro Enterprise development strategy, using SAST (Startegic Assumption Surfacing and Testing) and ISM (Interpretative Structural Modeling ). *International Journal Development Research*. 7(12), 17830-17834.
- Marlow and Mcadam. (2013). Gender and Entrepreneurship: Advancing Debate and Challenging Myths; Exploring the Mystery of the Under-Performing Female Entrepreneur. *International Journal of Entrepreneurial Behaviour & Research*. 19(1), 23-28
- Nobari, Khani, M. A., Davoudi, M. (2014). The Relationship between Servant Leadership and Organizational Citizenship Behavior of Employees at Valiasr Academic Complex, Islamic Azad University-Central Tehran Branch. *International Journal of Management and Business Research*. 4 (4),



247-254

- Rosa, J.M., Sylla, D. (2018). A comparison of the performance of majority female-owned and majority male-owned small and medium-sized enterprises. *International Journal of Entrepreneurship and Small Business*. 35 (3), 282-302
- Saturwa, H.H., Suharno, Abdul Aziz Ahmad. (2021). The impact of Covid 19 pandemic on MSMEs. *Jurnal Ekonomi dan Bisnis*. 24(1), 65-82
- Susiana,S. (2015). Penerapan Konsep Perencanaan dan Penganggaran Responsif Gender (PPRG) dalam Pembangunan Daerah (Studi di Provinsi Papua dan Yogyakarta. *Jurnal Masalah-masalah Sosial*. 6(1), 12-17
- Sandrasari, D., Kholil, Utomo, L. (2018). Kajian Pengembangan Industri Rumah Tangga Ikan Asap di Kabupaten Kendal Melalui Penerapan GMP (Good Manufacturing Practice). *Jurnal Industri Kreatif dan Kewirausahaan*. 1(2), 124-131.
- Wibowo, A.S., Sunarto, and Lestari, P (2016). Peran DPRD dalam melaksanakan fungsi pengawasan terhadap pembangunan infrastruktur di pedesaan Kabupaten Jepara. *Unnes Civic Education Journal*. 2(2), 38-51. Jakarta, Indonesia