PRIORITY SECTOR OF SMALL AND MEDIUM ENTERPRISES USING AHP: A CASE STUDY OF YAMARU ENTERPRISE

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ABSTRACT

Small and medium enterprises (SMEs) play an important role in the development of a country's economy by providing employment and using local resources; they also have the ability to quickly adapt to external and internal changes and technological developments due to their flexible nature. The development of SMEs continues to be encouraged, but there are many complex factors that impact their development, primarily focused on the lack of resources. This study seeks to determine priority sectors for developing SMEs and business units that offer the greatest potential opportunities. This study uses the AHP method, which is widely used in Multiple-Criteria Decision Analysis (MCDA). Out of the five criteria analyzed, human resources was the priority factor (28.1%) that must become the main focus for Yamaru enterprise. The results of this study can be adopted by other SMEs.

Keywords: SMEs; Yamaru; AHP; Manado; strategic management; MCDM

1. Introduction

Several previous studies suggest that small and medium enterprises (SMEs) are a critical economic engine in a country's development (Arthur-Aidoo, Aigbavboa, & Thwala, 2016). According to Rojas-Lema et al. (2019), the economic growth of developing countries is positively related to the work of SMEs.

The economy of most industrialized countries, previously sustained by large companies, is now dominated by SMEs. This is partly due to increasingly fierce global competition. The rapid development of technology provides many opportunities for SMEs to be more specialized in their product and service offerings. Technology also allows SMEs to enter the market with a simple strategy while utilizing all their available resources (Suroso, Anggraeni, & Andriyansah, 2017).

SMEs contribute to solving the unemployment problem experienced by many countries and promote equal opportunity for job seekers by creating a significant number of new jobs. In addition, SMEs are also vital for a country's economy because they utilize local natural resources (Idar, Yusoff, & Mahmood, 2012).

SMEs have become instruments of state development because they can mobilize and empower society as a whole (Suroso et al., 2017). This is due to several positive characteristics of SMEs; they are flexible, dynamic, innovative, efficient and small in size so that they are both nimble and flexible (Idar et al., 2012). Additionally, direct feedback, short decision-making paths, and faster market understanding allow them to quickly respond to consumer needs. However, SMEs must overcome their lack of resources which include a small workforce and revenue (Razak, Abdullah, & Ersoy, 2018).

SMEs in Indonesia are growing rapidly and are very important for several reasons such as their potential to create jobs. SMEs were able to contend with the Indonesian economic crisis of 1997 better than many large companies (Sunardi, Widyarini, & Hidajat, 2012). SMEs contributed 59.08% of the growth in the gross domestic product of $350,000,000, making SMEs one of the most important factors driving economic growth in Indonesia

(Suroso et al., 2017). Ninety-nine percent of all businesses in Indonesia are SMEs. They are the backbone of the Indonesian economy and contribute significant revenue (Irjayanti & Aziz, 2012).

According to García-Villagrán et al. (2020), during the Covid-19 pandemic, SMEs were encouraged to innovate by utilizing existing information technologies for marketing, promotion and payment systems, improving communication with consumers, building networks (networking), and partnerships, both with fellow SMEs, industry and government (García-Villagrán, Cano-Olivos, Martínez-Flores, & Sánchez-Partida, 2020)

Hadiyati and Hendrasto (2021) added that during the Covid-19 pandemic, the Indonesian government provided assistance to SMEs in the form of a policy of delaying loan repayment and encouraging domestic product consumption to stimulate SMEs to produce substitutes for imported products (Hadiyati & Hendrasto, 2021). As a result, SMEs have played an important role in the economic development of communities both during and post-Covid-19 pandemic.

In Indonesia, SMEs are defined as an enterprise having a net worth of not more than IDR 50,000,000.00 (fifty million rupiah), excluding land and buildings, where the business itself has an annual revenue up to a maximum of IDR 500,000,000.00 (five hundred million rupiah), not including land and buildings (President of Indonesia, 2008). Although important, SMEs have a number of challenges. Their biggest problem is the lack of availability of skilled human resources (Sunardi et al., 2012), limited access to markets, technology, information and capital. Many SMEs do not understand market needs, market share, and how to deliver their product or service to the market. They lack bargaining power, especially when dealing with big buyers. Although they understand market conditions, they have difficulty obtaining raw materials both in terms of availability and delivery. SMEs face significant competition to obtain access to bank loans or government financial institutions. Many are forced to find funding through lending institutions that charge high interest rates. They encounter logistical problems including energy, fuel, and labor costs (Irjayanti & Aziz, 2012). Another distinctive feature of SMEs is that they are easy to start and easy to close (Maulina & Fordian, 2018; Pawitan, 2012). Indonesian SMEs are generally classified as part of the agricultural sector (Pawitan, 2012). The Yamaru SME, which is engaged in agriculture as well as animal husbandry and religious figurine production, can be viewed as an example of a SME and the results of this study can serve as a reference for other SMEs.

This research studies the SMEs managed by the Yamaru Foundation. This foundation is owned by the brothers of 'Septem Dolorem Mariae', a Catholic religious order in the Diocese of Manado. The Yamaru SME is located in the village of Woloan, North Sulawesi, Indonesia.

The Yamaru SME operates three business units including agriculture, chicken-farming and religious figurine production. The goal of this research is to answer the following questions; what is the sector that should be prioritized for the development of the Yamaru SME?, and what business units have the most potential to be developed? This research focuses on marketing, financial, human resources, technology and management praxis.

Yamaru SMEs have a business capital of IDR 150.000.000 (US$ 10,500.00) excluding land and buildings, and employ 50 employees. The foundation aspires to expand its business and has sought assistance in assessing which businesses should be improved and also what sector should be developed in order to expand their foundation.

This study uses AHP as one of the Multiple Criteria Decision Making (MCDM) methods which is commonly used by decision makers to determine business priorities. The research will be used by the leadership of the Yamaru Foundation to determine future program priorities.

This study has several limitations. First, the number of respondents was only 10 people. Second, the respondents had a limited understanding of the AHP method; therefore, as suggested by Mu and Pereyra-Rojas (2018), the researchers were required to provide initial information about this methodology. All respondents attended a three hour meeting where the AHP methodology was explained and instructions given on how to fill out the questionnaire (Mu & Pereyra-Rojas, 2018)*.*

2. Literature review

There are several key factors that influence the development of SMEs such as human resources (Voca & Havolli, 2019)*;* marketing and technology (Ahmad, Imm, Aziz, & Basha, 2020)*;* government support (My, 2020)*;* entrepreneurship; and capital (Luo, Al-Shami, & Mansor, 2019). Researchers have focused on financial, marketing, technology, human resources, and practical management factors as criteria. Researchers do not use sub-criteria to avoid clashes between the same elements on other criteria.

2.1 Marketing in SMEs

Marketing has several definitions. First, marketing is defined as a management process in a business's effort to identify, anticipate and meet consumer needs. Second, marketing is defined as the process of planning and executing business concepts, determining prices and promotions with the aim of meeting consumer needs. Third, marketing is defined as a function of the organization and a number of processes for creating, communicating and delivering value to consumers and cultivating relationships with stakeholders that will benefit the business itself and consumers (Padmore, Taylor, & Frecknall-Hughes, 2006). The researchers used the definition of marketing as all business activities and held that it is the responsibility of all parties in the business.

Marketing has a very important position in SMEs. A business actor or entrepreneur must understand the potential opportunities and market size for the product or service (Indrawati, 2012). Understanding market opportunities includes the ability to forecast demand and determine position relative to the competition. According to Hamdani (2012), SMEs in Indonesia generally do business utilizing traditional marketing techniques (Hamdani & Wirawan, 2012). Problems commonly faced by SMEs include inadequate advertising and promotion of products or services, and lack of a marketing strategy that results in imprecise sales forecasts and plans. Market research in Indonesia generally relies on data collected from a few customers having a limited network of clients (Rojas-Lema et al., 2019) that results in an inadequate understanding of market conditions. Many times, this results in SMEs competing with large companies that can sell the same products at a lower price and/or with better service (Maulina & Fordian,

2018). Additionally, many SMEs in Indonesia do not properly use their time to understand the unique value of their products or services (Razak et al., 2018) or have marketers with the skills necessary to provide better customer service and overcome the perception held by many people in the domestic market that SMEs sell products or services that are low quality.

2.2 Management praxis

Management practices carried out by SMEs are related to the pattern and effectiveness of coordination, leadership, network structures and institutional relationships. Management practice emphasizes efforts to establish a common business vision and understand and implement strategies throughout the organization. Coordination and collaboration between business networks helps reduce uncertainty and risk. Practical management is also associated with the process of innovation and development. Institutional relationships increase interactions with stakeholders and strengthen business networks with suppliers, business partners, government and educational institutions (Rojas-Lema et al., 2019).

Problems faced by SMEs related to practical management are lack of control over products, inefficient product planning (Jester & Vera, 2012), insufficient task evaluation, including description of the division of tasks among workers, lack of productivity, and a general lack of good management practices.

2.3 Finance

Finance plays an important role relative to business expansion. SMEs typically rely on very limited personal savings or family funds to become established. Lenders are somewhat hesitant to provide assistance to new business units because there is a significant risk of failure. To offset this risk, the lending institution requires a high interest loan.

Problems faced in acquiring loan funds are often related to poor accounting records and a lack of budget plans (Jester & Vera, 2012). Another problem related to access to loans is that SMEs are small and they prefer short-term debt (Hendrawan, 2012), while lending institutions prefer providing long-term debt. Hendrawan (2012) added that the larger the business size, the higher the probability that the SMEs will be able to acquire a loan. Loan obtainment is also related to growth, the higher and faster the growth, the easier it is to access a loan. Furthermore, the age of the SME also matters. The older the firm, the stronger the belief that they have the ability to meet their financial obligations on time, which increases the chances of getting a loan.

Service businesses are usually less attractive to lending institutions than highly capital intensive businesses such as manufacturing because service businesses lack assets that can be used as collateral for loans. Larger banks sometimes require less collateral and also charge lower interest compared to small banks; however, the big banks tend to provide loans to SMEs that have been around for a long time and are larger because they are considered less risky.

The educational background of the SMEs manager is also extremely important. Managers with higher education will find it easier to access assistance. Many SMEs experience information asymmetry regarding bank loans (Gherghina, Botezatu, Hosszu, &

Simionescu, 2020). Financial shortcomings and difficulties negatively impact the production capacity of SMEs (Razak et al., 2018).

2.4 Technology

Technology has always been associated with machines, tools and instruments to improve and accelerate business operations. Fast technological developments need to be exploited by SMEs to seek and find new methods and processes to be able to survive competition (Hamdani & Wirawan, 2012). In the competitive business environment, the ability to survive is dependent on the ability to innovate using technology. Those who adapt and redefine their production processes usually survive. SMEs have great opportunities with technological advances because of their small size which makes them very flexible in adapting to technological advances (Askum, Staub, & Gonullu, 2017).

However, limited funds can also lead to a lack of technology development making it difficult to innovate and employ experts (Hamdani & Wirawan, 2012). Many SMES still use traditional technology such as old machines and outdated manual business equipment resulting in slow and inefficient production processes (Maulina & Fordian, 2018).

2.5 Human resources

Reliable human resources who have expertise and are well educated and have extensive experience in the business world will augment business performance (Suroso et al., 2017). SMEs in Indonesia experience serious problems related to their human resources, who generally lack sufficient expertise, experience and education. Lack of human resource skills affects business management, entrepreneurship, production engineering, product development, engineering design quality control, business organization, accounting, data processing, marketing techniques and market research (Maulina & Fordian, 2018).

2.6 Analytical Hierarchy Process

We are faced daily with decisions that are both very simple and more complex. One method that is widely used in decision making is the AHP which was introduced by Saaty (Atanasova-Pachemska, Lapevski, & Timovski, 2014). This method sorts the problem and arranges it in the form of a hierarchy to reduce the complexity of the problem and therefore greatly facilitates decision makers ability to make decisions, determine the criteria to be used and alternatives to be evaluated (Mu & Pereyra-Rojas, 2018). This method is also able to handle intangible criteria such as experience, subjective preferences (Ishizaka & Labib, 2009) and intuition originating from multi-person respondents with multi-criteria input (Vrana, 2008). This method can handle qualitative and quantitative data (Vrana, S, 2008) based on individual perceptions. The mathematical formulas used are not difficult, rather easy to understand and use (Forbes, Hebb, & Mu, 2018).

The AHP involves the four following steps: first, arrange the problem in the form of a multilevel hierarchy. Next, data is collected from respondents using a questionnaire in the form of pairwise comparisons. A consistency test is performed to ensure data validity and then the value of the elements at each level is calculated (criteria, alternatives). Next, the aggregation of the related weights (relative) is calculated to obtain the overall priorities which provides the global ranking of alternatives (Marcarelli & Squillante, 2019).

3. Methodology

This research follows several steps. The first step is to identify a decision problem and compile a hierarchy. The topmost level is the goal of the research, the second level is the criterion, and the third level is the alternatives as shown in Figure 1.
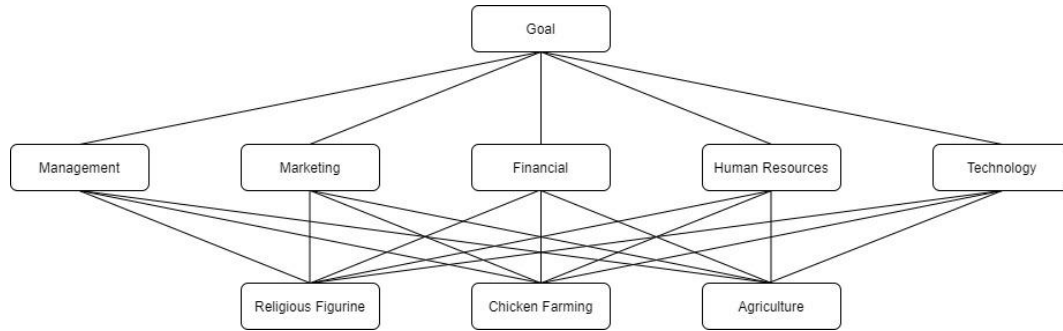

Figure 1 Hierarchy structure of AHP

The goal of this research is to determine the priority sectors of Yamaru SMEs. There are five factors that are used as criteria, namely: marketing, technology, human resources, financial and management. Marketing in this study is defined as the process of communicating about products and their value to consumers and building networks that are beneficial to both consumers and the Yamaru Foundation. Technology is understood as the use of tools, machines and computers to improve product quality and quantity. Human resources are understood as workers or managers who have adequate skills and knowledge and are able to take advantage of available technology or apply appropriate methods as well as innovate and be creative to improve Yamaru's performance. Financial is defined as the ability to manage, have an effective accounting system and have a good budget plan. Management is understood as good coordination, and the leadership and networking ability possessed by Yamaru's managers which affords a good working environment for all employees and stakeholders.

The alternatives are religious figurines, chicken farming and agriculture. The hierarchical structure consists of goals, criteria and alternatives. Sub-criteria have not been included in this study.

The second step is data collection through a questionnaire which is arranged in the form of pairwise comparisons using the values set by Saaty.

Table 1
Saaty's (1987) comparative scale

Intensity of Importance on an Absolute Scale	Reciprocal	Definition	Explanation
1	1	Equal Importance	Two activities contribute equally to the objective
3	1/3	Moderate importance of one over another	Experience and judgment strongly favor one activity over another
5	1/5	Essential or strong importance	Experience and judgment strongly favor one activity over another
7	1/7	Very strong importance	An activity is strongly favored and its dominance demonstrated in practice
9	1/9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2,4,6,8	1/2 , 1/4 , 1/6 , 1/8	Intermediate values between the two adjacent judgments	When compromise is needed

The advantage of pairwise comparison is that respondents only compare the two options which makes the evaluation very easy (Raco et al., 2020). According to psychologists, it is easier and more accurate to choose between two options than to choose from all the alternatives at once (Ishizaka & Labib, 2009).

When distributing the questionnaire, the researcher considered who were the right people to be involved, who would be involved in making the decision and for whom this decision would be made? (Forbes et al., 2018). The researchers identified the ten key leaders of the organization who are directly responsible for operation of the Yamaru SME. This questionnaire was distributed and completed by the 10 leaders of the Foundation. These leaders were considered to be experts since they have been part of Yamaru since its inception, have experience and knowledge in all the various industries of the organization including raising livestock, farming and production of religious figurines.

There are three chicken farming managers who have over 20 years of experience managing Layer Chicken Coops. Since 2018, the managers have been entrusted as the head of the Animal Husbandry unit.

The ability to manage laying hens is balanced with their skill of keeping egg production above 80% on average. This is achieved by maintaining the cleanliness of the cages,

quality of the feed and water and regular vaccinations. They now manage over 7000 chickens.

There are 3 religious figurine-making individuals that are very good at marketing, opening and producing statues. They are sculpture artists that have been working since 2016 and in 2019 succeeded in doubling their production.

Data collection was carried out in the form of group decision makers to reduce cognitive bias and obtain the group participant's synergy (Mu & Pereyra-Rojas, 2018). Saaty emphasized that any rule to combine the judgments of several individuals should also properly satisfy the reciprocal (R. Saaty, 1987).

However, not all respondents or experts always make the same choice. Different levels of knowledge and experience lead to different choices. The researchers asked respondents to avoid using extreme numbers such as 9 when filling out the questionnaires because in reality all of the criteria have approximately the same importance, and the extreme selection would not be helpful. If the authors found extreme values, the researchers recommended adjusting that number. Therefore, it is possible to give different weighting and importance to their choices. In real-world decision-making, it often happens that the decision-making situation is so unclear that the actions taken are blurred and not precisely known (Vrana, S, 2008).

In this study, the researchers used the aggregation of individual judgments and manually calculated them using the geometric mean (Equation 1). According to Basak & Saaty (1993) and Mu & Pereyra-Rojas (2018), the geometric mean is the correct way to synthesize the judgments given by the experts as reciprocal matrices.

According to Mu & Pereyra-Rojas (2018), the geometric mean is the correct way to aggregate judgments with the AHP and the geometric mean aggregation for our study.

$$GM = \sqrt[n]{(x_1)(x_2)\dots(x_n)} \dots\dots\dots\dots (1)$$

After obtaining the GM value for the questionnaire data, a pairwise comparison matrix for the criteria and alternatives is compiled using Equation 2:

$$A = [a_{ij}], \quad a_{ij} = \frac{w_i}{w_j}, \qquad a_{ji} = \frac{1}{a_{ij}}, \qquad a_{ii} = 1 \qquad (2)$$

The calculation of the priority weight begins by normalizing the pairwise comparison matrix using Equation 3,

$$b_{ij} = \frac{a_{ij}}{\sum_{i=n}^{n} a_{ij}} \qquad (3)$$

The priority weight is obtained using Equation 4,

$$w_i = \frac{\sum_{j=1}^{n} b_{ij}}{n} \qquad (4)$$

After the priority weight value is obtained, the consistency test is then determined by using Equations 5, 6 and 7 as follows:

The third step is to calculate the lambda maximum using the following formula:

$$\lambda_{max} = \sum_{i=1}^{n} \frac{(Aw)_i}{nw_i} \qquad (5)$$

The fourth step is to calculate the consistency index with Equation 6

$$CI = \frac{\lambda_{max} - n}{n - 1} \qquad (6)$$

The fifth step is to calculate the Consistency Ratio with a formula using the ratio index (Table 2).

$$CR = \frac{CI}{RI} \qquad (7)$$

Table 2
Ratio index (Saaty, 1987)

N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R.I	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

The calculation of the consistency index and the consistency ratio shows that the answers given by the respondents are open to inconsistency. This is because the numerical values come from individual subjective choices. Therefore, inconsistency in making choices is inevitable (Mu & Pereyra-Rojas, 2018), but the inconsistency has limits that can be accepted and tolerated. The inconsistency must be below 10% (< 0.1) (Saaty, 1987). Checking consistency is a crucial step to avoid misleading solutions.

The sixth step was calculating the global weight. Global weight is obtained by multiplying criteria and alternatives.

The seventh step is a sensitivity analysis using Super Decision version 2.10.0. A sensitivity analysis is known as a 'what if analysis' to see the extent to which the final result will change if there is a change in the criterion weights (Mu & Pereyra-Rojas, 2018). A sensitivity analysis helps researchers understand the strength of the decisions made and what the determining criteria are. This is an important part of the decision-making process and no final decision can be made in the absence of a sensitivity analysis (Mu & Pereyra-Rojas, 2018). Therefore, to ensure their robustness, the researcher conducted a sensitivity analysis between the criteria.

4. Results and discussion

The goal of the study was to determine the most prioritized sector of the Yamaru SMEs. Based on the literature review, the researcher determined five criteria to be studied, namely, management praxis, financial performance, human resources, technology utilization and marketing. There are three businesses which are among the alternatives

that will be studied, namely, agriculture, chicken-farming and religious figurine production.

The results of the data analysis showed that both the criteria and alternatives were consistent, namely CR < 0.1, so the results were valid for use. The data was calculated and synthesized using Microsoft Office Excel version 2019. The data was obtained through a questionnaire filled out by the Yamaru administrator and obtained using the 2019 version of Microsoft Office Excel and the results are shown in Tables 3-9.

The opinion of each respondent, according to Saaty, is used as the opinion of the group by combining these opinions using the geometric mean (Saaty, T., 2013; Saaty, R.,1987). Saaty (2008) added that the geometric mean is the best way to combine the opinions of each individual.

Table 3
Pairwise comparison, $Λ$-max, priority, CI and CR of criteria

	Mrk	Mgt	Fin	Tec	HR	Priority
Mrk	1.000	0.424	0.346	1.009	0.397	0.107
Mgt	2.357	1.000	0.683	1.738	0.896	0.225
Fin	2.891	1.463	1.000	1.421	0.680	0.250
Tec	0.992	0.575	0.704	1.000	0.534	0.138
HR	2.517	1.116	1.470	1.872	1.000	0.281
$Λ$-max = 5.072		CI = 0.018		CR = 0.016 (CR < 0.1)		

Explanation:
Mrk = Marketing
Mgt = Management praxis
Fin = Financial
Tec = Technology
HR = Human Resources

The priority weight was obtained using Equation 4.

Table 4
Pairwise comparison, Λ-max, priority, CI and CR of marketing toward alternative

	Rel- Fig	Agri	Chic-Farm	Priority
Rel.Fig	1.000	1.175	0.636	0.2910
Agri	0.851	1.000	0.515	0.2437
Chic-Farm	1.573	1.940	1.000	0.4652
Λ-max = 3.0003		CI= 0.0001	CR = 0.0002 (CR < 0.1)	

Explanation:
  Rel.Figur = Religious Figurine
  Agri = Agriculture
  Chic-Farm = Chicken-Farming

Table 5
Pairwise comparison, Λ-max, priority, CI and CR of management praxis toward alternative

	Rel- Fig	Agri	Chic-Farm	Priority
Rel. Fig	1.000	1.459	0.393	0.252
Agri	0.685	1.000	0.429	0.202
Chic-Farm	2.544	2.330	1.000	0.546
Λ-max = 3.024		CI= 0.012	CR = 0.021 (CR < 0.1)	

Table 6
Pairwise comparison, Λ-max, priority, CI and CR of finance toward alternative

	Rel- Fig	Agri	Chic-Farm	Priority
Rel.Fig	1.000	2.221	0.416	0.296
Agri	0.450	1.000	0.446	0.180
Chic-Farm	2.405	2.244	1.000	0.524
Λ-max = 3.085		CI= 0.042	CR = 0.073 (CR < 0.1)	

Table 7
Pairwise comparison, Λ-max, priority, CI and CR of technology toward alternative

	Rel- Fig	Agri	Chic-Farm	Priority
Rel.Fig	1.000	1.116	0.584	0.281
Agri	0.896	1.000	0.634	0.268
Chic-Farm	1.712	1.578	1.000	0.451
Λ-max = 3.004		CI= 0.002	CR = 0.003 (CR < 0.1)	

Table 8
Pairwise comparison, Λ-max, priority, CR and CR toward human resources

	Rel- Fig	Agri	Chic-Farm	Priority
Rel.Fig	1.000	0.823	0.552	0.247
Agri	1.215	1.000	0.610	0.291
Chic-Farm	1.810	1.639	1.000	0.462
Λ-max = 3.001		CI= 0.001	CR = 0.001 (CR < 0.1)	

Table 9
Final result of the alternatives

Criteria	Global Weight	Alternatives					
		Local Weight			Global Weight		
		Rel-Fig	Agri	Chic-Farm	Rel-Fig	Agri	Chic-Farm
A	B	C	D	E	F = C*B	G = D*B	H = E*B
Marketing	0.107	0.291	0.244	0.465	0.031	0.026	0.050
Management	0.225	0.252	0.202	0.546	0.057	0.045	0.123
Finance	0.250	0.296	0.180	0.524	0.074	0.045	0.131
Technology	0.138	0.281	0.268	0.451	0.039	0.037	0.062
Human Resources	0.281	0.247	0.291	0.462	0.069	0.082	0.130
				Sum	**0.270**	**0.235**	**0.495**

Explanation :
Column C refers to Religious Figurine
The same applies to columns A - H in Table 9

The final results of the alternatives (Table 9) calculation shows that the sector with the greatest weight was human resources (28.1%), followed by finance (25%) and then management praxis (22.5%). The business unit with the most potential to be developed was the chicken-farming business (49.5%), followed by religious figurine (27%) and agriculture (23.5%).

The results of the sensitivity test using Super Decisions Version 2.10.0 showed that by increasing the financial criteria by 10%, 30% and even 50% from its previous result, we found no change in the rating results for the business unit which had the highest rating (Figure 2). This means that the alternative of chicken-farming has the most potential to be developed.
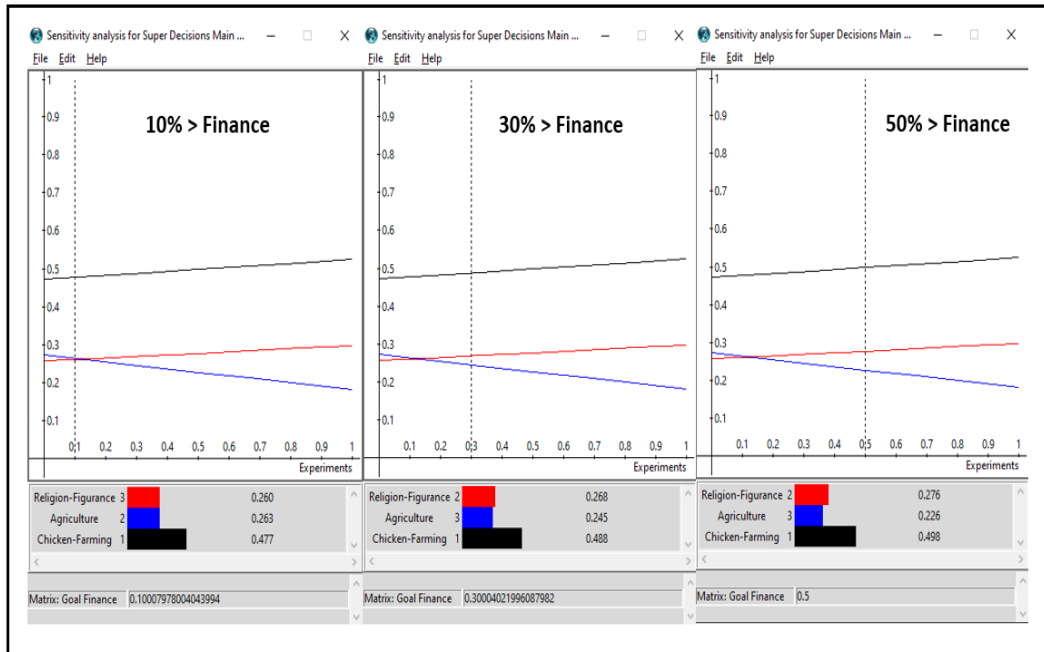
Figure 2 Sensitivity analysis by increasing the financial criteria to 10%, 30% and 50%

The next sensitivity analysis increased the management praxis criteria by 10%, 30% and 50% from the previous results, and the results show that there is no change in the alternative business units. The chicken-farming alternative remains the business unit with the most potential to be developed (Figure 3).

Figure 3 Sensitivity analysis by increasing management praxis criteria to 10%, 30% & 50%

Therefore, it can be concluded that increasing the percentage of the financial and praxis management criteria using a sensitivity analysis does not provide a significant change to the existing business unit rating.

The results of the sensitivity analysis of the criteria showed that the management praxis criteria are the most sensitive because a change of 10% of those criteria will alter the existing business priorities.

The results of the data analysis show that human resources is the most important factor (28.1%) for Yamaru's business development. The importance of human resources has been confirmed by Hernita et al (2021). They found that human resources were a key factor in the performance and success of SMEs (Hernita, Surya, Perwira, Abubakar, & Idris, 2021). Hadiyati and Hendrasto (2021) added that in this Covid-19 pandemic era, reliable, knowledgeable human resources are key because they provide creative and innovative ideas for a small business to survive and grow (Hadiyati & Hendrasto, 2021). This was also confirmed again by Abdulaal and Nordin (2020) who found that creativity and innovation can be expected from quality human resources, (Abdulaal & Nordin, 2020). Bilan et al. (2020) found that good human resources are an important and effective factor in the growth of SMEs, especially in increasing sales revenue, enterprise assets, and expansion volume (Bilan, Mishchuk, Roshchyk, & Joshi, 2020). Luo et al. (2019) also found that human resources are a very important factor that constitute the core competitiveness of an enterprise (Luo et al., 2019). Therefore, Ahmad and Imm (2020) recommend that SMEs recruit skilled human resources and then invest in them through education and tailored training to increase their knowledge and expertise to enhance innovation (Ahmad et al., 2020). My (2020) recommends that reliable human resources in SMEs are needed to adapt an organization in today's rapidly changing digital age. She also points out that these human resources are critical and cannot simply be replaced with an advanced technology (My, 2020). Surya et al. (2021) found that in addition to technical capabilities, human resources need to develop skills associated with work behavior and personal attributes.

These findings serve as critical inputs for Yamaru SME's management as it develops a plan to make the necessary key investments in its human resources, including recruitment strategies focused on hiring employees with the necessary skills that are congruent with Yamaru's needs, providing employee development through education and training and of course, accompanied by adequate wage and remuneration schemes.

5. Conclusion

The aim of the study was to find the priority factors and efforts that must be considered in the development of Yamaru SMEs using the AHP application where decisions are made by a group of 10 decision makers. The researchers used the AHP method to make a real decision, which was to determine the priority sectors and the type of business that should be developed.

The reliability of the AHP is very high as it detects the highest and least priorities and provides information to Yamaru management about the priority sector and types of business that must be developed. The results show that the most important criteria are

human resources (28.1%), followed by finance (25%), then praxis management (22.5%), technology (13.8%) and marketing (10.7%). The business that must be the main concern is chicken-farming (49.5%), followed by the production of religious figurines (27%) and finally agriculture (25.5%).

The sensitivity analysis showed that the alternative of chicken farming is robust. An increase of 10%, 30% and even 50% of financial and management praxis criteria did not significantly impact the overall ranking when it comes to choosing the best alternative. This is important information for Yamaru's management.

In developing its business, Yamaru must focus on the development of human resources in the chicken-Farming business, for example, good training and education.

The AHP's application to the Yamaru SMEs studied the business development by taking into account the views of a group of decision makers. This study will help Yamaru's management focus and establish priorities with an emphasis on the importance of human resource management (HRM) and the development of the chicken farming business.

The limitations and shortcomings of the conducted research were primarily related to the limited number of respondents. This study was based on the opinions of 10 respondents who are familiar with and know Yamaru well. In this study, the researchers did not include a sub-criteria analysis. The results of this study may not be free of bias as the outcome is based on the understanding and judgment of those respondents. Additionally, all respondents did not understand how to complete the AHP questionnaire, so the researcher had to provide additional information. Future studies will look at the other criteria.

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