



Comparison of E-Commerce in UMKM Ledre Bojonegoro Regency With Analytical Hierarchy Process

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Article Information

History of article:
Received October 2023
Approved October 2023
Published October 2023

ABSTRACT

Micro, Small, And Medium Enterprises (MSMEs) are crucial drivers of regional and national economic growth. The growth of MSMEs, coupled with increased employment opportunities and output, underscores their important role in economic development. The pace of technological advancement has created various e-commerce options. MSMEs must adapt to the demands of Industry 4.0 to ensure their longevity. This study compares e-commerce options for marketing use by Ledre's Micro, Small, and Medium Enterprises in Bojonegoro Regency. The aim is to determine which platform is best using the Analytical Hierarchy Process method for effective decision support. Subjective evaluations are avoided, and technical terms are explained. The text adheres to conventional academic structure, provides logical progression, and uses formal language with precise vocabulary. The Analytical Hierarchy Process selects and identifies top-priority criteria and significant alternatives for each category of criteria in e-commerce. The categories include aspects of the promotion system, payment system, web design, and risk in Micro, Small, and Medium Enterprises (MSMEs) of Bojonegoro Regency. The Analytical Hierarchy Process prioritizes key-person quality over respondent quantity in research. According to the process calculation, the most crucial factor is risk, with a weight of 49.54%. Criteria for electronic marketing in Micro, Small, and Medium Enterprises should include optimizing social media, pay-at-site payment systems, easy-to-use website design, and legal protection risks. The primary option for Bojonegoro Regency Ledre Micro, Small, and Medium Enterprises to enhance sales through electronic marketing is the utilization of Shopee, an e-commerce platform.

Keywords: e-commerce; AHP (Analytical Hierarchy Process)

JEL Classification Code: L66, M20, O30

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DOI: <http://dx.doi.org/10.21107/mediatrend.v18i2.22941>

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INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) have a very important contribution in improving the economy of a region and the economy of a country (Setiawan, 2023). In Indonesia, currently MSMEs are growing very rapidly from year to year. This development has increased both in the number of units, the provision of employment and even the amount of output produced. Figures based on data from the Ministry of Cooperatives and Small and Medium Enterprises show a clear picture. There are 65.4 million MSMEs in Indonesia that employ around 114.7 million people or account for around 56% of the total labor force in Indonesia. In addition, the contribution of MSMEs to Indonesia's Gross Domestic Product (GDP) also exceeds 60.5% (Limanseto, 2022).

According to the recapitulation of data on the number of MSMEs at the Bojonegoro Regency Central Statistics Agency (BPS) in 2022, which increased from 80,637 to 84,820 (BPS Bojonegoro 2022). One of the growing MSMEs in Bojonegoro is the Ledre MSME. Ledre is famous as a specialty food of Bojonegoro Regency, however, inappropriate marketing has resulted in the slow development of Ledre MSMEs. Along with the development of technology 4.0 where business is carried out online by developing digital technology (Clausen, 2023), MSMEs need to adapt to these changes to maintain their sustainability in the long term (Jayanti & Karnowati, 2023). Digital marketing has been carried out by many MSMEs in Indonesia, one of which is through e-commerce (Sahlan & SAS, 2022). E-Commerce can be defined as an electronic product platform used by sellers and buyers in conducting transactions electronically (Mahuda et al., 2021).

The more rapidly technology develops, the more choices of E-Commerce platforms are available. According to SimiliarWeb data, Shopee became the most visited E-Commerce platform in Indonesia

in the third quarter. Shopee had an average of 216.8 million visits per month, while Tokopedia recorded an average of 97.1 million visits and the Lazada site with an average of 52.2 million visits (Databoks, 2023). The high number of E-Commerce platform users does not guarantee that a product will be seen by customers. In research conducted by (Tran 2021) states that the use of e-commerce platforms during the pandemic is considered effective and increasingly involved in sustainable consumption behavior, but does not explain in detail which e-commerce is the right choice for long-term sales sustainability in MSMEs. This makes business actors cannot be careless in choosing a marketplace for their business, because the platform chosen will also affect the development of the business being run (Hartini, 2020). The existence of E-Commerce sites is expected to increase the income of MSME players because on the one hand, all forms of marketing mechanisms applied during business implementation are supported by the convenience of digital technology (Lismula, 2022).

The selection of platforms in e-commerce requires careful consideration through strategic decisions to identify and select factors that play an important role in the successful development of MSMEs (Tolstoy et al., 2022). Production theory is an attempt to explain the principles used by companies in business to determine the number of products they produce and sell and the inputs needed to carry out their production activities (Suryana, 2022). Production theory includes basic economic concepts such as product prices and production factor prices (wages or rent). According to Murti Sumarti and John Soeprihanto in (Rahmadani, 2017), production includes all activities aimed at creating or increasing the use of goods and services that require production factors.

Production theory is divided into two parts, namely, short-term and long-

term. In short-term production, there are fixed inputs and variable inputs. The fixed input is capital, and the variable input is labor (Damayanti, 2020). To increase output in the short term, economic actors cannot increase capital, but can increase the number of workers. The addition of labor should not be too large to maintain productivity. However, in long-term production, capital and labor are variable inputs and there are no fixed inputs (Surur, 2021). Production theory helps understand how production factors can affect the selling price so that it also affects the sales and marketing of a product in MSMEs.

Previous research conducted by (D. I. Putri et al. 2022) states that the results of research by applying the user screening method, namely distributing questionnaires, show that around 89.7% of Shopee users, 6.9% of Tokopedia users and 3.4% of Lazada users. However, the ease of use of electronic commerce scored 93.1% for the Shopee application, 3.4% for the Lazada application, and the ease of the Tokopedia application was 3.4%. The overall survey results of the highest level of e-commerce usage are the Shopee application. However, the research only aims to analyze which e-commerce applications are widely used today. Research conducted (Witro et al., 2021) using the Miles and Huberman analysis technique method found that marketplace contestation such as Tokopedia, Shopee, Bukalapak Lazada and Blibli with various types of unique strategies and promotions, business people began to utilize e-commerce to offer their products. E-commerce should create a local e-commerce system that can reach MSMEs. Research conducted by (Kalalo & Kindangen, 2022) using the AHP method shows that the most important factors influencing customers' e-commerce choices are price, product variety, and security.

On online shopping platforms, customers choose stores that offer affordable prices and diverse products. Customers

are also very concerned about privacy and security when using online shopping platforms. Shopee is the most preferred online shopping platform for customers. Tokopedia needs to improve performance and recommendations on Bukalapak to attract more customers. (Mashuri & Dermawan's research, 2022) using the Partial Least Square (PLS) method found that customer loyalty has a significant and positive direct influence on Shopee brand equity. The higher the impression of customer loyalty, the higher the level of brand equity. Research conducted (Al-Farrel & Sri, 2021) states that there are several factors that support the rapid growth of the e-commerce sector in Indonesia, namely increasing smartphones and the internet, population, having many young people who are quick to adjust to new technology.

Based on the results of previous research conducted by (Lismula, 2022), it was found that the effect of E-Commerce on the development of MSMEs was to increase income, increase assets and business forms, increase production of goods, facilitate marketing and promotion and a wider and unlimited market reach. Research (Jaya & Raya, 2022) and (Hendiana et al., 2022) state that e-commerce variables affect sales but are different from social media variables which have no effect on sales. Meanwhile, research (Hendiana et al., 2022); (Tiandra et al., 2019); (Firdaus et al., 2022) shows that e-commerce has a positive and insignificant effect on the performance of MSMEs. Contrary to research conducted by (Utami & Syahbudi, 2022); (Gustina et al., 2022) which shows that e-commerce has a significant effect on increasing MSME sales in Binjai City.

There are several factors that can influence buyers' decisions in choosing e-commerce that they will use in digital shopping. REVISION 2 in previous research conducted (Ginting & Nugraha, 2019); (Supriyok, 2020) found that the promotion

coefficient value is positive, meaning that if the promotion variable increases, user satisfaction and sales will increase. Research by (Mokodompit et al., 2022); (Nasution et al., 2022) said that the Cash On Delivery (COD) payment system has a significant effect on consumer purchasing decisions in online shopping. Based on this, this research tries to develop the AHP method in choosing the most suitable marketplace platform for Ledre MSMEs in Bojonegoro Regency.

The gap in previous studies in the application of e-commerce as digital marketing lies in the lack of specificity in the use of e-commerce in certain businesses. Previous research does not explain how e-commerce can be effectively applied to MSMEs so that it can increase the development of MSMEs. The novelty of this research lies in the method carried out using the Analytical Hierarchy Process (AHP) as a decision support system to find out the right policy applied to Ledre MSMEs in Bojonegoro Regency. AHP is a practical approach to solving complex decision-making problems involving the comparison of alternatives. AHP also allows decision makers to represent hierarchical relationships between aspects, criteria or alternatives in decision making (Oktapiani et al., 2020). The purpose of this research is to select and identify the top priority criteria and the most important entities (alternatives) as a representation of each type of criteria based on the aspects of the promotion system, payment system aspects, web design aspects and risk aspects. This research is important for the development of Ledre MSMEs in Bojonegoro Regency to increase. Furthermore, because the need to identify choices using the AHP method involves criteria and alternatives which are important factors (top priorities) for the success of choosing the most appropriate e-commerce in Bojonegoro Ledre MSMEs is to use the Analytical Hierarchy Process (AHP) method.

METHODOLOGY

This research uses quantitative descriptive research with the data source used is primary data taken from respondents who are experts by means of observations, interviews and questionnaires that have been filled out by experts. The method used is the Analytical Hierarchy Process (AHP) which is applied to support MSME decisions in choosing the most suitable e-commerce based on a number of criteria and suggested alternatives (Magdalena, 2018). Analytical Hierarchy Process (AHP) is a quantitative analysis method by breaking down a complex and unstructured situation into several components in a hierarchical manner, by assigning subjective values that have the relative importance of each variable and determining which variables have the highest priority to influence the outcome.

AHP was chosen for the decision-making method in this study because the advantage of using the AHP method is a decision support system that helps in solving complex situations into several components in a hierarchical arrangement. AHP can help in identifying priorities that must be considered in determining policies for selecting e-commerce alternatives in MSMEs. The object of this research is Ledre MSMEs in Bojonegoro Regency. Bojonegoro Regency was chosen as the location for this research because Bojonegoro is a city that is famous as a Ledre city but in reality there are only 133 Ledre MSMEs in Bojonegoro Regency out of a total of 74,768 MSMEs registered with a business license (Disperindag Bojonegoro 2023). In this study, a comparison of e-commerce will be examined in terms of aspects of the promotion system, aspects of the payment system, aspects of web design and aspects of risk in ledre umkm.

Calculations with the AHP concept prioritize quality over quantity of keyperson. The keyperson is determined based on consideration due to his expertise who

is experienced and understands in the field of e-commerce, has experience in managing MSMEs so that he can provide knowledge in the decision-making process, and has the ability to evaluate existing decision alternatives and give values to each predetermined criterion. The keyperson used in this research is as follows:

dance with the Analytical Hierarchy Process concept. The next step is to complete the analytical hierarchy framework with alternatives. The process of identifying several alternatives was carried out by preparing a questionnaire in the second stage. The results of the questionnaire were forwarded to experts as respondents

Table 1.
Key persons in the selection of e-commerce in Ledre MSMEs in Bojonegoro Regency

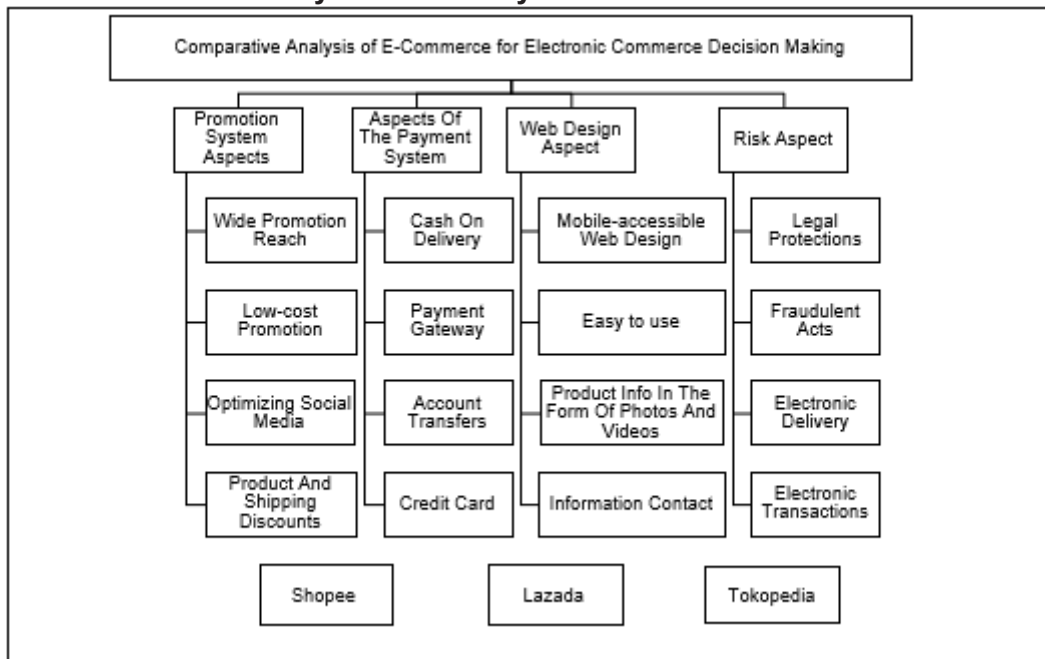
<i>Key Person</i>	<i>Description</i>
Dinas Perdagangan, Koperasi dan Usaha Mikro	Respondent 1
Dinas Perdagangan, Koperasi dan Usaha Mikro	Respondent 2
Lecturer (educator)	Respondent 3
Lecturer (educator)	Respondent 4
Ledre MSMEs in Bojonegoro Regency	Respondent 5
Ledre MSMEs in Bojonegoro Regency	Respondent 6
Bojonegoro Institute	Respondent 7
LPM Indonesia	Respondent 8

Sources: processed data, 2023

The research steps include two main stages (Krisnanda Tiony et al., 2019). The first stage begins with a literature study, preparing questionnaires, collecting primary and secondary data and building an analytical hierarchy framework in accor-

(Mustofa et al., 2023). Then the results of the questionnaire were analyzed using Saaty's pairwise comparison scale. Furthermore, in the comparison scale, the weight and consistency are calculated. If the consistency ratio value is $\leq 10\%$ then

Table 2.
Analytical Hierarchy Process Framework



the data processing results are valid, if the ratio value is >10% then it can be said to be invalid (S. A. Putri et al., 2023).

After analyzing the data and producing an assessment using level 1, level 2, and level 3 criteria as alternative criteria, it is arranged according to the table shown in table 2.

After obtaining the hierarchical structure, the next step is to create a pairwise comparison matrix. The calculation of the pairwise comparison matrix uses Saaty's basic scale of absolute numbers. The following is Saaty's basic scale of absolute numbers:

Table 3.
Fundamental Scale of Absolute Numbers

Scale	Description
1	Both elements have equal value and equal influence
3	One element is slightly more important than the other
5	One element is clearly more important than the other
7	One element is very clearly more important than the other element
9	One element is absolutely more important than the other element
2,4,6,8	Values between two adjacent elements have uncertainty

Furthermore, compiling questionnaire materials which were then given to lecturers as academics, the Office of Trade, Cooperatives and Micro Enterprises of Bojonegoro Regency as the government, several Ledre MSMEs in Bojonegoro Regency as business people, and several commutas in Bojonegoro Regency. The analysis method used for selecting the right e-commerce for Ledre MSMEs in Bojonegoro Regency is Analytical Hierarchy Process (AHP).

RESULTS AND DISCUSSION

Micro, small and medium enterprises (MSMEs) play an important role in meeting the product needs of an area, even have a wider reach and their products can spread in various regions. Marketing of MSME products cannot be separated from digital technology (Dzulhaq et al., 2019). E-commerce is one of the digital marketing used by Ledre MSMEs in Bo-

jonegoro Regency. The large number of existing electronic commerce sites makes MSME players required to choose well the e-commerce site to be used. AHP is one of the decision support systems that can be used to compare e-commerce in Bojonegoro Regency Ledre MSMEs. The results of data calculations and the preparation of an analytical hierarchy framework structure with the AHP concept to analyze the purpose of comparing e-commerce sites in supporting electronic commerce decision making as listed in table 4.

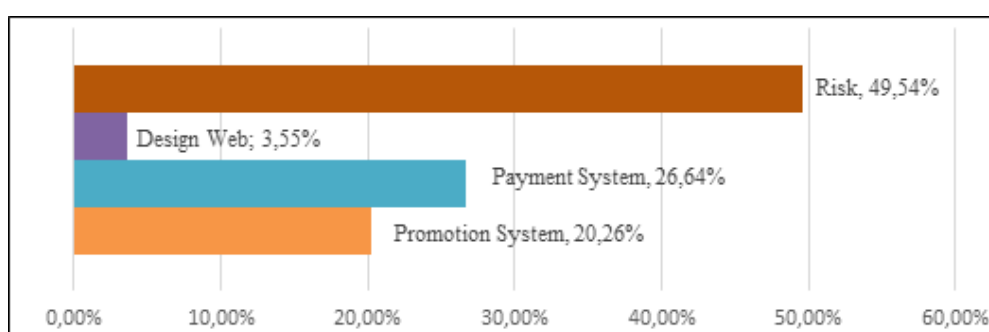
Table 4 above shows that the Consistency Ratio (CR) calculation should have a value of less than 0.1 or equivalent to 10% (CR ≤ 10%). Based on the results of the calculation, all data from the in-depth interviews with key people show consistency because the Consistency Ratio (CR) value is less than 0.1 or 10% (CR ≤ 10%). Since consistency is assumed, the geometric mean is calculated for each aspect. The priorities among the criteria obtained from six experts through questionnaires were converted and then aggregated. The following are the results of the priority weight calculation for each aspect in table 5.

From the results of calculating the priority weights for each aspect above, a ranking is obtained on the aspects that are prioritized for e-commerce in MSMEs. Based on the priority weights in Table 5. The results of the aspect ranking are shown in the following figure 1.

Table 4.
Consistency Ratio on Aspect Matrix, Criteria and Alternatives

Stakeholder	Consistency Ratio					
	ASPECT	Promotion system	Payment system	Design Web	Risk	Alternative
Respondent 1	0.05605615	0.09546131	0.096413232	0.063282051	0.070833333	0.003127625
Respondent 2	0.0974563	0.023571429	0.078740074	0.036315042	0.098811432	0.012520635
Respondent 3	0.058407738	0.069988146	0.069988146	0.075	0.070454545	0.06363687
Respondent 4	0.07702381	0.051850788	0.043999954	0.075796071	0.093235259	0.080799058
Respondent 5	0.098138198	0.077651515	0.045045788	0.095880682	0.083911733	0.037643739
Respondent 6	0.082768227	0.047257786	0.06114375	0.058125	0.075520559	0.002531746
Respondent 7	0.033298942	0.076280594	0.014041675	0.078209379	0.026098901	0.006444444
Respondent 8	0.09607433	0.046666667	0.057727273	0.019785068	0.046666667	0.012520635

Source: Processed data, 2023



Source: Processed data, 2023

Figure 1.
Result of Weighting on Each Aspect

Based on the weighting results in Figure 1, it is obtained that the risk aspect is the aspect with the highest priority, namely 49.54%, the second priority is the payment system aspect with a priority weight of 26.64%, the third is the promotion system aspect with a priority weight of 20.26%, and the lowest priority weight is in the web design aspect, namely 3.55%. It can be interpreted that the most important aspect that needs attention in electronic commerce in Ledre MSMEs is the risk aspect. The data of the priority weight analysis of the aspects of the support system in table 6.

In Table 6. Through the AHP analysis stage, the priority weights on the promotion system aspects are known and the rankings are obtained which are then presented in the following percentage graph in figure 2.

The results of the weighting of each criterion in the aspect of promotion system obtained the highest ranking of social media optimization with a weight of 33.84%, the second ranking of low-cost promotion 25.82%, the third ranking of wide promotional reach 22.58%, and the last ranking of product discounts and shipping costs 17.76%. The weighting results for the payment system aspect in table 7.

The table 7 is a calculation of the priority weight on the payment system aspect. Obtained rankings that are percentages in figure 3.

Hasil pembobotan masing-masing kriteria pada aspek sistem pembayaran diperoleh peringkat tertinggi pada kriteria cash on delivery 52,69%, transfer rekening 29,12%, payment gateway 11,34% dan kartu kredit 6,86%. Perhitungan bobot prioritas pada aspek desain web pada tabel 8.

Table 5.
Results of Priority Weight Calculation of Each Aspect

ASPECT	Promotion system	Payment system	Design Web	Risk	Amount	Priority weight	RANK
Promotion system	0.197591	0.2100317	0.2100317	0.1929060	0.8105606	0.2026401	3
Payment system	0.252499	0.268396	0.268396	0.2764660	1.0657583	0.2664395	2
Design Web	0.038145	0.0365241	0.0365241	0.0309972	0.1421902	0.0355475	4
Risk	0.511765	0.4850474	0.4850474	0.4996306	1.9814906	0.4953726	1
SUM	1	1	1	1	4	1	

Sources: processed data, 2023

Table 6.
Results of Priority Weight Calculation of Each Aspect

Criteria of promotion system	Wide range of advertising	Low Cost Promotion	Social Media Optimization	Product and Shipping Discounts	Amount	Priority weight	RANK
Wide range of advertising	0.273824	0.2437538	0.2437538	0.1419864	0.9033180	0.22582	3
Low Cost Promotion	0.273824	0.2437538	0.2437538	0.2713199	1.032651	0.25816	2
Social Media Optimization	0.214279	0.3607961	0.3607961	0.4178422	1.3537131	0.33842	1
Product and Shipping Discounts	0.238074	0.1516960	0.1516960	0.1688513	0.7103173	0.17757	4
SUM	1	1	1	1	4	1	

Sources: processed data, 2023

Based on the analysis that has been carried out, priority weights and rankings are obtained in the web design aspect. The graph of the percentage calculation of priority weights on web design aspects in figure 4.

The results of weighting each criterion in the web design aspect obtained the highest ranking, namely easy to use 40.76%, contact information 27.91%, product info 21.34% and the lowest ranking is in web design 9.99%. Based on the results of data processing on risk aspects, the priority weights are obtained in the table 9. Weighting on the risk aspect obtained a ranking that is emphasized in figure 5.

The results of weighting each criterion in the risk aspect are obtained with the highest priority weight, namely legal

protection 54.17%, electronic delivery 22.57%, electronic transactions 16.29%, and the lowest weight is fraud 6.98%. The calculation of e-commerce comparison alternatives is presented in the table 10.

Based on the weighting that has been carried out on alternatives as a comparison of e-commerce, priority weights and rankings are obtained for each e-commerce. The percentage of ranking on alternatives in figure 6.

The data on alternative criteria is displayed in Figure 6, indicating that Shopee e-commerce ranks first with a weight of 94.72%, followed by Tokopedia in second place with a weight of 3.95%, and Lazada in third place with a weight of 1.33%. Therefore, Shopee e-commerce is the most widely used and effective electronic



Figure 2.
Criteria Weighting Results on Promotion System Aspects

Table 7.
Calculation of Priority Weights for Environmental Conservation Criteria

Criteria of Payment System	Cash On Delivery	Payment Gateway	Account Transfer	Credit Card	Amount	Priority weight	RANK
Pay At the Door	0.570238	0.5322633	0.5322633	0.5332010	2.1679658	0.5268684	1
Payment Gateway	0.116859	0.1090764	0.1090764	0.1224095	0.4574209	0.1133508	3
Account Transfer	0.237321	0.2956849	0.2956849	0.2737161	1.1024072	0.2911566	2
Credit Card	0.075582	0.0629752	0.0629752	0.0706732	0.2722060	0.0686241	4
SUM	1	1	1	1	4	1	

Sources: processed data, 2023

marketing application for Ledre MSMEs in Bojonegoro Regency.

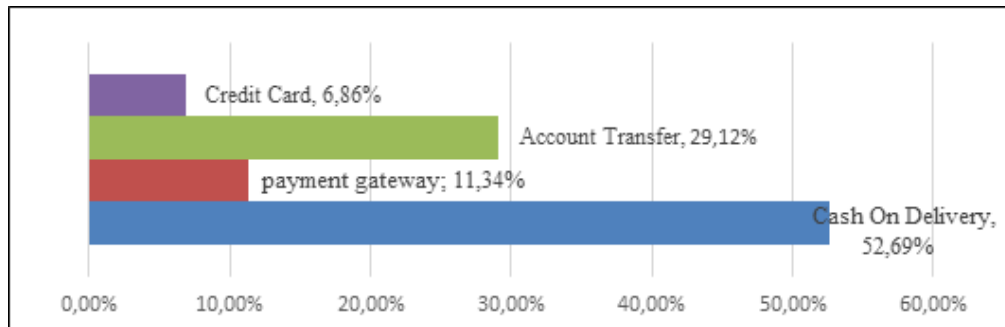
Risk aspect

The results of the analysis using the Analytical Hierarchy Process (AHP), obtained the main aspect that needs to be considered by Ledre MSMEs in using electronic marketing is the risk aspect. This is in line with research conducted by (Dewi Wahyuni, 2021), which shows that risk has a significant positive effect on consumer safety, but consumer safety has a significant positive impact on their purchase intention. The risk aspect has four criteria, namely electronic transactions, electronic delivery, fraud and legal protection. Based on the analysis using the AHP method, the most superior is legal protection. Legal protection is very important to note in e-commerce transactions that are carried out through parties who do not meet each

other face-to-face but remain connected through the internet network. (Saragih et al., 2023) states that e-commerce policies regulated in the ITE Law guarantee the protection and security of sellers, promoters and customers in conducting business activities from e-commerce. To protect the parties in an internet sales contract, merchants must comply with mutually agreed rules, as stipulated in article 25 of the ITE Law, which regulates the security of personal data between merchants and customers, as well as providing the legal protection provided. It can be concluded that protection is an important aspect for business people to consider in doing business on e-commerce platforms.

Payment system aspects

The payment system aspect is one of the important aspects that must be considered by MSMEs in electronic commerce.



Sources: processed data, 2023

Figure 3.
Criteria Weighting Results on Payment System Aspects

Table 8.
Results of Priority Weight Calculation on Web Design Aspects

Criteria of design web	Mobile-accessible web design	Easy to use	Product information	Contact information	Amount	Priority weight	RANK
Mobile-accessible web design	0.091347	0.1198369	0.1198369	0.0685427	0.3995641	0.0998910	4
Easy to use	0.34459	0.4520609	0.4520609	0.3815306	1.6302427	0.4075606	1
Product information	0.247625	0.1467696	0.1467696	0.312487	0.853652	0.2134130	3
Contact information	0.316437	0.2813324	0.2813324	0.2374391	1.1165409	0.2791352	2
SUM	1	1	1	1	4	1	

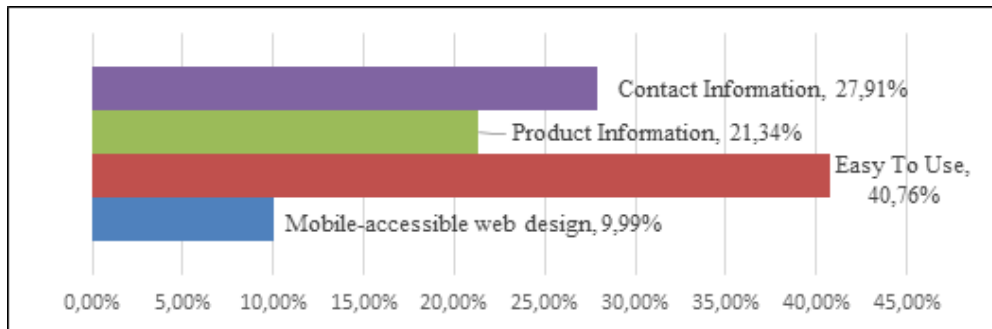
Sources: processed data, 2023

The payment system aspects used in the comparison of e-commerce sites in MSMEs are pay on site, payment gateway, account transfer and credit card. The results of the AHP analysis show that the pay-on-site criteria are the most important criteria in the payment system aspect. Payment systems with pay on the spot are in great demand today. In accordance with research conducted by (Hasan & Reza, 2021), which states that after implementing the on-site payment system, the Deal of The Day store succeeded in attracting many buyers. Most buyers prefer the pay-on-site method when shopping at the Deal of The Day store. It is assumed that this kind of payment system will be in high demand by buyers because it is easy to use with less risk of payment. Ledre MSMEs can use the same payment system to att-

ract buyers who use e-commerce with a payment system on the spot.

Aspects of the promotion system

Research conducted by (Parluhan & Setiawan, 2020), revealed that the promotion strategy variable has a positive and significant influence on the benefits of selling fashion MSMEs in the online marketplace. However, after analyzing using the AHP method, the promotional system aspect is only in rank 3, which means that the promotional system aspect is less considered in choosing the appropriate e-commerce for Ledre MSMEs. In the promotion system, the priority criterion is to optimize social media. (Prihadi & Susilawati's research, 2018) shows that promotion on social media has a significant effect on the marketing performance of traders. The use of advertising strategies through social me-



Sources: processed data, 2023

Figure 4.
Criteria Weighting Results on Web Design Aspects

Table 9.
Results of Priority Weight Calculation on Risk Aspects

Criteria of Risk	Legal Protection	Fraudulent Acts	Electronic Delivery	Electronic Transaction	Amount	Priority weight	RANK
Legal Protection	0.512342	0.5467850	0.5467850	0.5607310	2.1666434	0.5416608	1
Fraudulent Acts	0.066143	0.0705896	0.0705896	0.0717348	0.2790572	0.069764	4
Electronic Delivery	0.268118	0.217421	0.217421	0.1996495	0.9026093	0.2256523	2
Electronic Transaction	0.153397	0.165204	0.165204	0.1678845	0.6516899	0.1629224	3
SUM	1	1	1	1	4	1	

Sources: processed data, 2023

dia can improve marketing performance. This is because by communicating through social media, the message conveyed will be widespread in a very short time and indirectly influence the minds of consumers to realize that the product has been sent and sold. Through optimizing social media as an e-commerce promotion can also have an effect on the development of MSMEs, because the era of technology that makes digital users continue to grow, one of which is social media users, every day obtaining some information from social media.

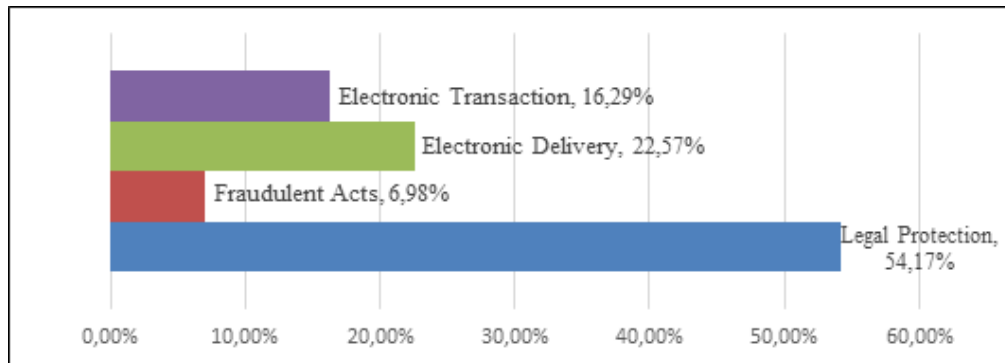
Website design aspect

The results of the study state that web design is an aspect that is not prioritized in the comparison of e-commerce in Ledre MSMEs. This is contrary to research conducted by (Yohanes et al. 2022), which resulted in the conclusion that the overall black box test results reached perfect agreement and concluded that the e-comm-

erence website design made was acceptable and had good functionality for users. In the analysis that has been done using the AHP concept, this website design aspect has four criteria, namely website design that can be accessed by mobile, easy to use, product info in the form of photos and videos, and contact information. Based on AHP calculations, the most superior criterion in the aspect of website design is easy to use. A website that has an attractive appearance will be able to attract potential customers, but attractive is not enough because more and more new users will use the website if the website is easy to use and has various features that support their activities.

Alternative

From the analysis that has been done, it is found that the alternative that gets the highest weight is Shopee e-commerce. This means that Shopee is the



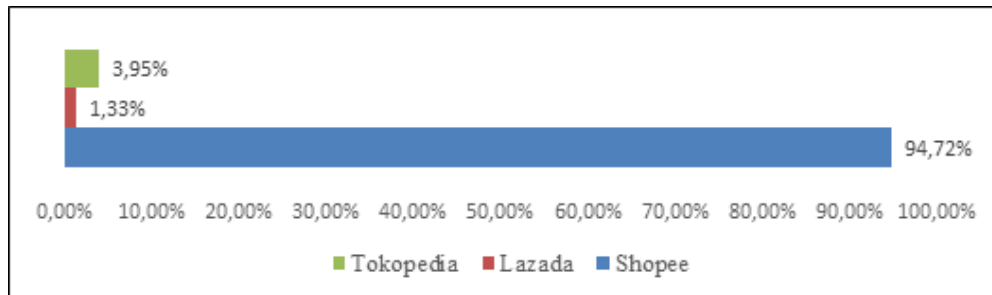
Sources: processed data, 2023

Figure 5.
Results of Criteria Weighting on Risk Aspects

Table 10.
Results of Priority Weight Calculation on Alternatives

Alternatives	Shopee	Lazada	Tokopedia	Amount	Priority weight	RANK
Shopee	0.933740395	0.932668369	0.97506564	2.841474403	0.947158134	1
Lazada	0.016852256	0.016832908	0.00623359	0.039918754	0.013306251	3
Tokopedia	0.049407349	0.050498723	0.01870077	0.118606843	0.039535614	2
SUM	1	1	1	3	1	

Sources: processed data, 2023



Sources: processed data, 2023

Figure 6.
Results of Weighting on Alternative Criteria

form of e-commerce that is most chosen as a top priority compared to Tokopedia and Lazada as an electronic trading site for Ledre MSMEs in Bojonegoro Regency. This is supported by research conducted by (Yuliah et al., 2021), which states that shopee makes it easier for MSME players to market products while making sales using their smartphones, thereby increasing market share and sales volume. The use of shopee e-commerce can be used as a

policy by Ledre MSMEs in business development in order to maximize ledre sales. The shopee electronic commerce system as a form of information technology advancement has many benefits, such as reducing interaction costs between buyers and sellers, simplifying interactions without time and location restrictions, providing more alternatives, ease of advertising and ease of service delivery to consumers or customers without requiring large-scale

capital or investment.

CONCLUSIONS

Based on conducted research, small and medium enterprises, especially Ledre MSMEs in Bojonegoro Regency, must be able to maximize the significant potential of electronic commerce. There are many types and advantages of e-commerce. Therefore, this research has synthesized four AHP analysis criteria that highlight the benefits and types of electronic commerce as alternative options. According to the results of AHP hierarchical analysis and data processed with Microsoft Excel software, the most crucial factor of electronic commerce that is best suited for Ledre MSMEs is the risk aspect, which holds a weight of 49.54%. Other factors to be considered include optimizing social media, implementing pay-on-site payment systems, designing an easy-to-use website, and addressing legal protection risks. Shopee dominates the online market with a priority weight of 94.72%, surpassing other entities like Tokopedia with a weight of only 3.95% and Lazada with 1.33%. Shopee's e-commerce site is significantly superior when compared to the other two. Shopee appears to be the optimal choice for e-commerce and a priority for electronic commerce among Ledre MSMEs in Bojonegoro Regency. This is because the majority of the MSMEs in Bojonegoro Regency specialize in producing specialty foods and sell their products in a conventional manner.

The use of Shopee as an electronic commerce platform for Ledre MSMEs in Bojonegoro Regency is a suitable choice. The continuous increase in Shopee users every year demonstrates significant potential for traders to expand their market reach. If the MSMEs can take advantage of this growing momentum on Shopee, it will be beneficial for the long-term trade of products from Ledre MSMEs in Bojonegoro Regency. The platform offers a

potent solution, granting legal protection to both buyers and sellers in the digital marketplace, providing a sense of security and building trust between MSMEs and consumers. Shopee offers a user-friendly website simplifying the creation of online stores and marketing of products, even for those who may be less proficient in digital commerce. The presence of an instant payment system that simplifies the user experience has resulted in heightened usage and demand for the Shopee platform. Furthermore, Shopee offers an avenue for MSMEs to compete fairly within the digital economy.

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