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DECISION SUPPORT SYSTEM FOR INSTAGRAM ACCOUNT PERFORMANCE ASSESSMENT OF BATIK RUMAH MERAH

SISTEM PENDUKUNG KEPUTUSAN PENILAIAN KINERJA AKUN INSTAGRAM BATIK RUMAH MERAH

Amelia Kurniawati*), Rizki Fajar Ahmad Gurnita, Fahmy Habib Hasanudin, Fandi Achmad, Rayinda Pramuditya Soesanto

Department of Industrial Engineering, Telkom University, Bandung, Jawa Barat 40257, Indonesia
Jl. Telekomunikasi No.1, Sukapura, Kec. Dayeuhkolot, Kabupaten Bandung, Jawa Barat 40257
Email: ameliakurniawati@telkomuniversity.ac.id

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ABSTRAK

Batik tulis Lasem merupakan warisan budaya Indonesia yang dicirikan dengan motif dan warna hasil akulturasi budaya Jawa dan Tionghoa. Saat ini, pengusaha batik tulis Lasem sudah mulai memanfaatkan media sosial, terutama Instagram, untuk menjangkau pasar yang lebih luas. Batik Rumah Merah, yang merupakan objek penelitian ini, memiliki lima akun Instagram, dengan nilai engagement rate yang beragam. Kelima akun tersebut perlu dipantau kinerjanya, agar Batik Rumah Merah dapat menentukan target dan rencana untuk periode berikutnya. Dengan demikian, penelitian ini bertujuan untuk merancang sistem pendukung keputusan penilaian kinerja akun Instagram milik Batik Rumah Merah. Metode pengambilan keputusan yang digunakan adalah Weighted Sum Model (WSM). Penelitian dilaksanakan melalui beberapa langkah utama, yaitu tahap pendahuluan, penentuan kriteria, penentuan alternatif, pengumpulan data, perancangan sistem pendukung keputusan, perancangan proses bisnis, analisis, dan kesimpulan. Kriteria yang digunakan adalah followers growth rate, weekly followers, steady growth factor, weekly engagement rate, engagement rate, average likes, average comments, weekly posts, followers ratio, dan comments ratio. Bobot yang digunakan dapat ditetapkan oleh pengguna. Alternatif yang digunakan adalah lima akun Instagram milik Batik Rumah Merah. Sistem yang dirancang sudah dilengkapi dengan proses bisnis, sehingga memudahkan pengguna. Hasil yang didapat dengan menggunakan metode WSM menghasilkan nilai untuk peringkat 1 dengan nilai 0.59862, peringkat 2 dengan nilai 0.5491, peringkat 3 dengan nilai 0.4168,peringkat 4 dengan nilai 0.3464, peringkat 5 dengan nilai 0.3034 dengan urutan rumahmerahindonesia, oemahbatik_nusantara, batikrumahmerahlasem, oemahbajulasem, oemahbatiklasem.

Kata kunci: engagement rate, instagram, sistem pendukung keputusan

ABSTRACT

Lasem hand-drawn batik is an Indonesian cultural heritage characterized by motifs and colors resulting from the acculturation of Javanese and Chinese cultures. Currently, Lasem hand-drawn batik entrepreneurs have begun to utilize social media, especially Instagram, to reach a wider market. Batik Rumah Merah, which is the object of this study, has five Instagram accounts, with varying engagement rates. The performance of the five accounts needs to be monitored, so that Batik Rumah Merah can determine targets and plans for the next period. Thus, this study aims to design a decision support system for assessing the performance of Batik Rumah Merah's Instagram accounts. The decision-making method used is the Weighted Sum Model (WSM). The research was carried out through several main steps, namely the preliminary stage, determining criteria, determining alternatives, data collection, designing a decision support system, designing a business process, analysis, and conclusions. The criteria used are followers growth rate, weekly followers, steady growth factor, weekly engagement rate, engagement rate, average likes, average comments, weekly posts, followers ratio, and comments ratio. The weights used can be determined by the user. The alternatives used are five Instagram accounts belonging to Batik Rumah Merah. The designed system is equipped with a business process, making it easier for users. The results obtained using the WSM method produced a value for rank 1 with a value of 0.59862, rank 2 with a value of 0.5491, rank 3 with a value of 0.4168, rank 4 with a value of 0.3464, rank 5 with a value of 0.3034 with the order rumahmerahindonesia, oemahbatik_nusantara, batikrumahmerahlasem, oemahbajulasem, oemahbatiklasem.

Keyword: engagement rate, instagram, decision support system

INTRODUCTION

Batik Tulis is a traditional Indonesian fabric recognized as an Intangible Cultural Heritage of Humanity by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2009 (UNESCO, 2021). The characteristic that distinguishes batik tulis from other fabric types is

**Coressponding Author*

using a resist technique in the coloring process, namely wax (UNESCO, 2021). One of the areas producing batik tulis is Lasem District, Rembang Regency, Central Java Province. Lasem batik tulis, an acculturation of Javanese and Chinese cultures, has developed since the 15th century (Maghfiroh *et al.,* 2023; Achmad *et al.,* 2023). The motifs of Lasem batik tulis that are influenced by Javanese culture include parang and kawung, while the motifs that are influenced by Chinese culture include the hong bird and banji. In its development, motifs emerged from Indigenous craftsmen, such as loan and water pecah (Maghfiroh, 2020). In addition to the motifs, Lasem batik also has a unique color scheme, which is reminiscent of the color scheme of Ming dynasty porcelain objects, which are called bangbangan (red on a white background), kelengan (blue on a white background), bang biron (red and blue on a white background), bang ijo (red, blue, and green on a white background), and bang ungon (red and purple on a white background) (Maghfiroh *et al.,* 2023).

Data from the cultural preservation institution, the Lasem Heritage Foundation, shows that in 2022, there were 78 active batik production houses involving 1,032 workers (Aidilla, 2024). Thus, batik tulis is one of the drivers of the economy of the Lasem District community. To market their products, batik tulis entrepreneurs use various methods, from selling at their respective outlets, participating in exhibitions, or consigning products to resellers. When the COVID-19 pandemic occurred, sales decreased due to restrictions on community movement. Therefore, Lasem batik entrepreneurs must start utilizing digital marketplaces and social media. One of the social media that Lasem Batik entrepreneurs widely use is Instagram. Using various Instagram features, Lasem Batik entrepreneurs can reach potential customers widely, introduce products, and make product sales (Nursanti and Wiyarti, 2024). Lasem Batik entrepreneurs study sales through social media through external partners. The ability of batik entrepreneurs to obtain, understand, and utilize knowledge from external partners is the key to success (Kurniawati *et al.,* 2022). The use of Instagram social media is still maintained by Lasem batik entrepreneurs, even though the COVID-19 pandemic has ended. This is done because Lasem batik entrepreneurs understand that using Instagram has brought in potential customers. Nursanti *et al*. (2024) identified the pattern of live sales on Instagram carried out by several Lasem batik entrepreneurs. Based on frequency, some do it incidentally, once every few weeks, weekly, or daily. Meanwhile, based on the live sales schedule, some are held from morning to night, only at night, or randomly. In one live sales broadcast, an Instagram account managed to sell 100 to 200 pieces of batik cloth. The high number of sales shows that Lasem Batik entrepreneurs have succeeded in building customer trust. Customers believe in the quality of batik products, even though they do not see and feel them directly. Customer trust is built through product testimonials, transparency of the sales process, and a return process if the product is not suitable (Nursanti and Wiyarti, 2024).

This is in line with several previous studies showing that the quality and quantity of interactions with customers on Instagram are positively related to customers' desire to make purchases (Natiqa *et al.,* 2021; Shafa *et al.,* 2023; Albertina and Barkah, 2024). The role of Instagram in increasing sales is one of the interesting issues that have been widely discussed in recent studies (Rejeb *et al.,* 2022), for example, celebrity endorsements (Herjanto *et al.,* 2020) and the use of artificial intelligence (Saputra *et al.,* 2023). For Lasem batik entrepreneurs, it is hoped that Instagram can help achieve sales targets.

One of the Lasem Batik entrepreneurs who utilizes Instagram is Batik Rumah Merah. Currently, Batik Rumah Merah has five Instagram accounts, each of which is managed by its team. The management of these accounts is supported by facilities such as rooms and devices so that the content produced has good audio and visual quality. Of course, it is hoped that the expenditure for these resources will provide positive feedback in the form of profits. Therefore, Batik Rumah Merah needs to monitor each Instagram account's performance. By monitoring social media performance, business owners can make decisions regarding resource allocation (Kumar *et al.,* 2022). One of the performance measures that need to be monitored from an Instagram account is the Engagement Rate, which describes the level of viewer engagement in the content displayed (Zulkarnain *et al.,* 2024). Based on the literature, a good Engagement Rate value can vary according to the type of industry and the number of account followers. As an illustration, according to a report from RivalIQ in 2024, the Engagement Rate value per post for the clothing industry was 0.193%, with an average number of posts of 6.1 per week (Feehan, 2024). The minimum good Engagement Rate value for accounts with between 5 thousand and 20 thousand followers is 2.28%, while for accounts with between 20 thousand and 100 thousand followers, it is 1.62% (Putranto *et al.,* 2022). Data on the number of followers and Engagement Rate values of five accounts owned by Batik Rumah Merah, as of November 18, 2024, are shown in Table 1. The table shows that the account with the most followers is @rumahmerahindonesia, while the account with the highest Engagement Rate value is @oemahbatik_nusantara.

The engagement rate value of the five accounts is still relatively low, based on the theory of a good engagement rate value based on the number of followers. Meanwhile, when associated with the type of industry, there is a value above the average of 0.193%.

Table 1. Number of followers and engagement rate value of batik Rumah Merah account

Account Name	Number of Followers	Engagement Rate Value
@oemahbatiklasem	54,521	0.10%
@oemahbajulasem	19,135	0.21%
@oemahbatik_nusantara	15,055	0.34%
@rumahmerahindonesia	77,702	0.09%
@batikrumahmerahlasem	62,195	0.08%

The engagement rate value of Batik Rumah Merah accounts can still be increased because Indonesian people's interest in social media is relatively high. This can be seen from Indonesia's average Engagement Rate value for accounts with between 10,000 and 100,000 followers, which is 5.22% (Slice, 2024). In addition to the engagement rate, Instagram also provides several other metrics that can be used as a basis for assessing the performance of an account. Through these metrics, Batik Rumah Merah can assess the development of the accounts it owns. Assessments can be carried out periodically, for example, weekly or monthly, and the results of these assessments become the basis for planning content in the following period. This assessment can be carried out by utilizing the concept of multi-criteria decision-making, for example, using the Weighted Sum Model (WSM) method. The WSM method has been used in several assessments, for example, related to the level of sales service satisfaction (Saragih *et al.,* 2023), the performance of the workshop manager (Pertiwi *et al.,* 2021), and employee performance assessments (Kurniawan *et al.,* 2024). Thus, this study aims to design a decision support system for assessing the performance of the Instagram account belonging to Batik Rumah Merah.

RESEARCH AND METHOD

A Decision Support System (DSS) is a system that can assist in decision-making. This assistance utilizes data and modules to solve unstructured or semi-structured problems. A decision support system is a model system with several data processing procedures and considerations to assist managers in making decisions. The system must be simple, easy to control, adaptable, and complete (Wanto *et al.,* 2020). This study aims to design a decision support system using the methodology shown in Figure 1.

In the preliminary stage, activities were carried out to identify problems through observation and literature studies. The second stage is determining the criteria based on Instagram's performance indicators. These indicators are mainly related to followers and Engagement Rate. The third stage is determining alternatives, which are determined based on the accounts owned by Batik Rumah Merah. The fourth stage is data collection, which assesses each criterion of each alternative account. The data used as an example is the data available on the status in November 2024. The fifth stage is designing the DSS using the WSM method. At this stage, each criterion is given a weight value to obtain a total value for each alternative. The sixth stage is designing the business process for using the designed DSS. The seventh stage is analyzing the design results. The eighth stage is drawing conclusions based on the results obtained from the design.

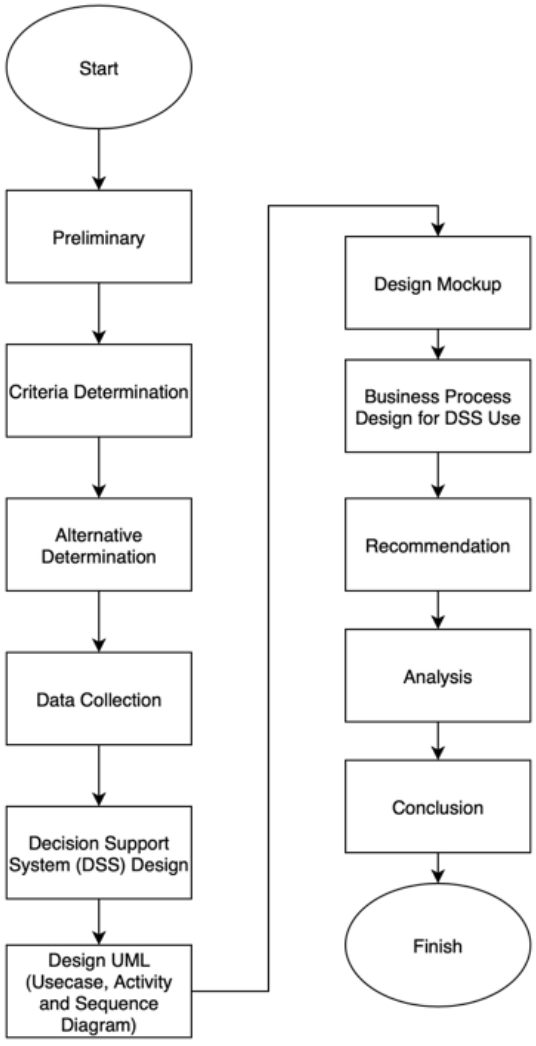

Figure 1. Research methods

Weighted Sum Model (WSM) is one of the most frequently used Multi-Criteria Decision Making (MCDM) approaches because of its ease. WSM is usually used for problems with one dimension (with the same units) (Triantaphyllou, 2000). The WSM formula can be seen in equation:

$A_{\text{Wsm-score}} = \max_i \sum_{j=1}^{n} a_{ij} w_{jx} \; for \; i = 1,2.3, \ldots . m.$ (1)

Some steps that can be taken to calculate WSM are as follows:

a. Determining the weight of the criteria
b. Calculating the total score for each alternative
c. Comparison of alternative scores

The design of the DSS using WSM this time emphasizes the system's ease of use (Nurimansjah *et al.,* 2023). Therefore, the system uses Google Spreadsheets for ease of modification and use. The spreadsheet design for the DSS is carried out using the Rapid Application Development (RAD) method (Gholamzadeh *et al.,* 2024). RAD is a system design method that emphasizes iteration in system creation. RAD begins with identifying system needs, creating a system, and testing it; if it does not meet the needs, the system will be redesigned until the design meets the needs in several iterations. Finally, the implementation of the system that users can use.

RESULT AND DISCUSSION

The preliminary stage was carried out by observing Batik Rumah Merah and viewing the Instagram accounts owned by Batik Rumah Merah. Observations were carried out to obtain an overview of the performance of each Instagram account owned by Batik Rumah Merah. In addition to observations, interviews with Batik Rumah Merah provided information about developments and problems faced in Instagram social media. After the observations were carried out, the next activity, namely literature studies, began by seeking solutions from various references that could be found that were closely related or similar to current problems. From the literature study, information was obtained that Engagement Rate was related to the desire to buy. Therefore, it is necessary to monitor the performance of Batik Rumah Merah's Instagram accounts using multicriteria. Based on the observations and literature studies, it was determined that several criteria can be used to assess the performance of Batik Rumah Merah's Instagram accounts, as stated in Table 2.

Table 2. Weight and criteria

Criteria	Weight
Followers Growth Rate (90 Days)	0.15
Weekly Followers	0.1
Steady Growth Factor	0.1
Weekly Engagement Rate	0.15
Engagement Rate	0.1
Average Likes	0.1
Average Comments	0.1
Weekly Posts	0.05
Followers Ratio	0.1
Comments Ratio	0.05

These criteria are given weights. In a decision support system, the weight value can be determined by the owner of Batik Rumah Merah. For testing purpose, the weight of each criterion is determined based on Chaudhary (2021), Gon (2021), and discussion with the manager of Batik Rumah Merah. The definition of each criterion and the explanation of its weighting are as follows (Chaundhary, 2021; Gon, 2021).

1. Followers Growth Rate (90 Days)
   The percentage of followers gained over the last 90 days. This criterion is given a weight of 0.15 because the number of followers will provide an overview of the account's popularity level, which will impact its long-term growth.
2. Weekly Followers
   The number of followers who follow the account during a week. This criterion is given a weight of 0.1 because it shows the account's popularity in the short term, unlike the first criterion, which shows the long term.
3. Steady Growth Factor
   Consistency of follower growth. 100% means very consistent and predictable growth. A less than 40% value indicates that the growth is very inconsistent (perhaps due to getting followers the wrong way). This criterion is given a weight of 0.1 because this value provides an overview of consistency that is not too crucial compared to actual growth.
4. Weekly Engagement Rate
   Cumulative engagement rate for all posts in the last 7 days. This is a better indicator of engagement than just engagement rate because it takes weekly posts into account. This criterion is given a weight of 0.15 because it provides an overview of the activity of account visitors each week.
5. Engagement Rate
   The average engagement for the latest posts compared to the number of followers. This criterion is given a weight of 0.1 because it provides an overview of visitor activity but is not as significant as the weekly engagement rate criterion.
6. Average Likes
   Average likes are a direct measure of engagement. A weight of 0.1 is given because this value is less significant than several other criteria.
7. Average Comments
   Average comments, just like the average likes, this criterion weights 0.1 because the significance of the criterion is not too great.
8. Weekly Posts
   Posts per week are given a weight of 0.05 because the quantity of posts does not have a significant impact compared to the quality of the posts.
9. Followers Ratio
   The number of followers compared to each account followed. A weight of 0.1 is given

because it shows a relatively important correlation of account reach.

10. Comments Ratio
    The number of comments received for every 100 likes. Given a weight of 0.05, it is not very significant for engagement.

The next stage in this study is the determination of alternatives. The alternative to this problem is the Instagram account of Batik Rumah Merah. Currently, Batik Rumah Merah has five accounts, namely @oemahbatiklasem, @oemahbajulasem, @oemahbatik_nusantara, @rumahmerahindonesia, and @batikrumahmerahlasem. At the data collection stage, a search was carried out on the values of each criterion for each account. The data collection results show that no dominant accounts have high values for all criteria. The highest value data for each criterion (as of November 18, 2024) is presented in Table 3.

The next stage is the design of the DSS. The DSS is designed using Google Spreadsheets to make it easier for users to run calculations. Creating a simple DSS in Google Spreadsheet allows users to modify the system created to support the sustainability of analysis of accounts owned by Batik Rumah Merah. Several Unified Modeling Language diagrams shown in Figure 3, Figure 4 and Figure 5 support the design to model the system to make it easier to design:

1. *Use Case Diagram*
   Figure 2 illustrates the use case diagram used for this decision support system. The actor here has three features: view, edit, and delete criteria, making it easier to calculate the WSM when criteria change
2. *Activity Diagram*
   Figure 3 explains how the owner actor performs calculations starting from accessing the spreadsheet until the calculation results appear.

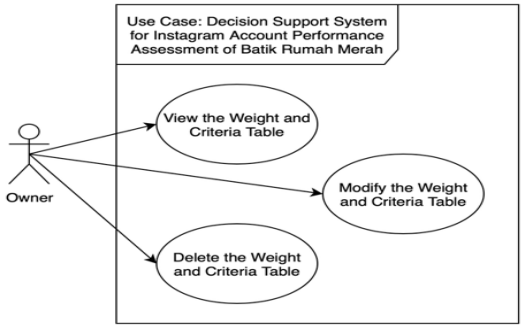

Figure 2. Use case diagram for instagram account performance assessment

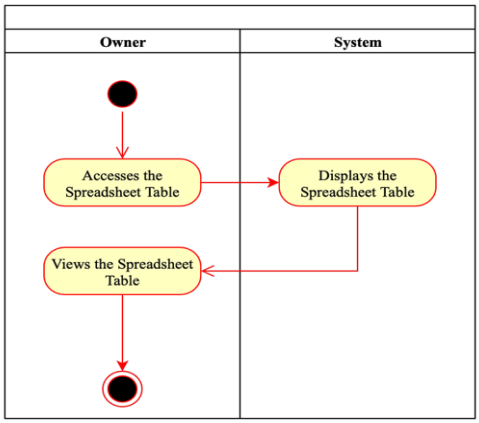

Figure 3. Activity diagram for instagram account performance assessment

3. *Sequence Diagram*
   Figure 4 shows the sequence diagram for performing the WSM calculation process in this DSS. This sequence shows the time required to access and perform the WSM calculation. Judging from the diagram, the time required is not too long. After designing the system requirements using UML, the next step is to create a mockup design for the decision support system. Figure 5 shows the mockup design that was created.

Table 3. Highest score of each criteria

Criteria	Value	Account
Followers Growth Rate (90 Days)	10.83%	@batikrumahmerahlasem
Weekly Followers	403	@batikrumahmerahlasem
Steady Growth Factor	100%	@oemahbajulasem @oemahbatik_nusantara
Weekly Engagement Rate	7.04%	@oemahbatik_nusantara
Engagement Rate	0.34	@oemahbatik_nusantara
Average Likes	46	@rumahmerahindonesia
Average Comments	29	@oemahbatik_nusantara
Weekly Posts	22	@oemahbajulasem
Followers Ratio	0.15	@rumahmerahindonesia
Comments Ratio	138.86	@oemahbatik_nusantara

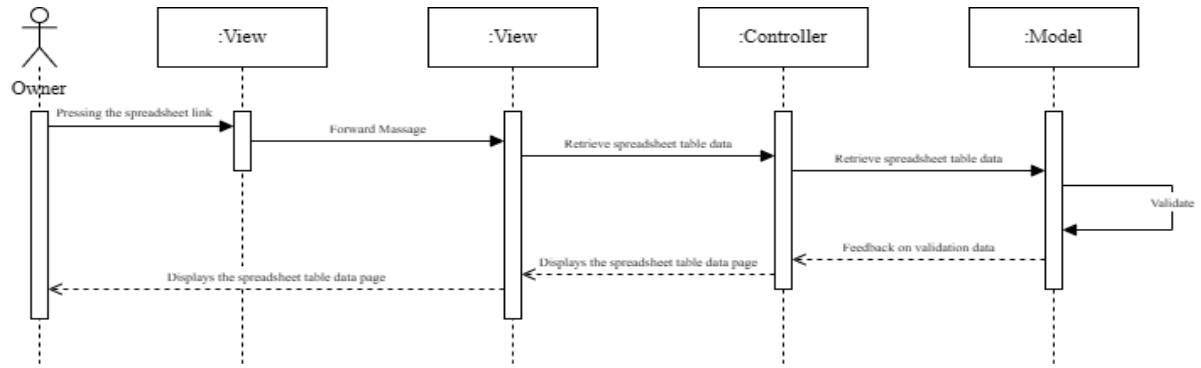

Figure 4. Sequence diagram owner

Table 4. Normalization Calculation

Criteria Weight	**0.15**	**0.1**	**0.1**	**0.15**	**0.1**	**0.1**	**0.05**	**0.1**	**0.05**
Account	**Followers Growth Rate (90 Days)**	**Weekly Followers**	**Steady Growth Factor**	**Weekly Engagement Rate**	**Engagement Rate**	**Average Likes**	**Average Comments**	**Weekly Posts**	**Followers Ratio**
oemahbatiklasem	0.614	0.412	0	0.032	0.077	0.444	0.583	0	0.407
oemahbajulasem	0	0	1	0.559	0.5	0	0.25	1	0.074
oemahbatik_nusantara	0	0	1	1	1	0.074	1	0.833	0
rumahmerahindonesia	0.7	0.928	0.749	0.078	0.038	1	0.75	0.667	1
batikrumahmerahlasem	1	1	0.409	0	0	0.481	0.333	0.611	0

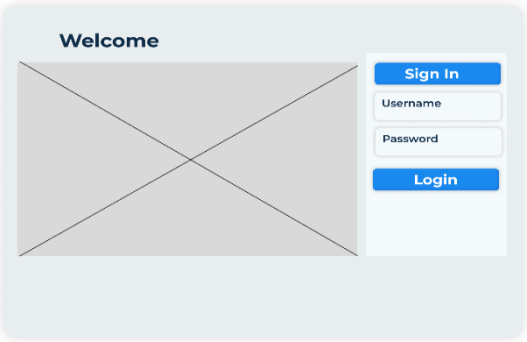

Figure 5. Mockup Login

The calculation is carried out in the following stages (Hasanudin *et al.,* 2024):

1. Entering data into Decision Support System or other like excel or Google Spreadsheet.
2. Normalizing data using the Min-Max method for each data in the cell:
   a. Determining the minimum and maximum values of each criteria column
   b. Using the minimum and maximum numbers in the normalization formula, for example:

$$Xmin = 6.65\%$$
$$Xmin = 0\%$$
$$Xmax = 10.83\%$$
$$X' = \frac{X - Xmin}{Xmax - Xmin} \quad (2)$$
$$X' = \frac{6.65\% - 0\%}{10.83\% - 0\%}$$
$$X' = 0.614$$

3. Summing up the entire normalized result for each (alternative) row as shown in Table 3, example:

$$B1\ (Weight) = 0.15$$
$$\vdots$$
$$B6\ (Weight) = 0.05$$
$$X'11 = 0.614$$
$$\vdots$$
$$X'16 = 0.407$$
$$(B1 * X'11) + \cdots + (B6 * X'16) = \ldots$$
$$(0.15 * 0.614) + \cdots + (0.05 * 0.407) = 0.3034$$

The calculation results of all alternatives are then compared to determine the best alternative as in Table 5 which shows the order of the best accounts

Table 5. WSM Calculation and Rankings

WSM Score	**Ranking**	**Account**
0.3034	5	oemahbatiklasem
0.3464	4	oemahbajulasem
0.5491	2	oemahbatik_nusantara
0.5986	1	rumahmerahindonesia
0.4168	3	batikrumahmerahlasem

After getting the criteria and results for the support system, then the retrieval process at the Batik Rumah Merah will be depicted on Figure 6.

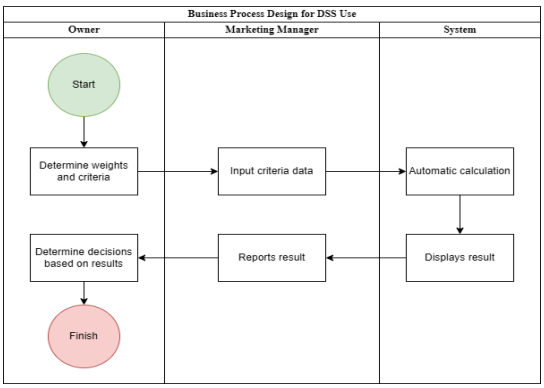

Figure 6. Business process of DSS usage

The existing design results created a business process for DSS so stakeholders can use the system correctly in the time periods set by Batik Rumah Merah. The designed business process is presented in Figure 6. There are two system users:

1. *Owner*

Have the authority to enter criteria and weights into the "Master Data" table on the "Determination of Weights and Criteria" sheet

The changing color of the number on the right side of the final criteria must indicate the sum of all weights. If the cell is red, it mean that the total weight is not yet appropriate; if it is, then it is appropriate and can be used for further calculations, as seen in Figure 8.

0.05	1
Comments Ratio	
0.04	0.99
Comments Ratio	

Figure 8. Total weight color

To add criteria, press the add button on the system and the results will appear as in the Figure 9.

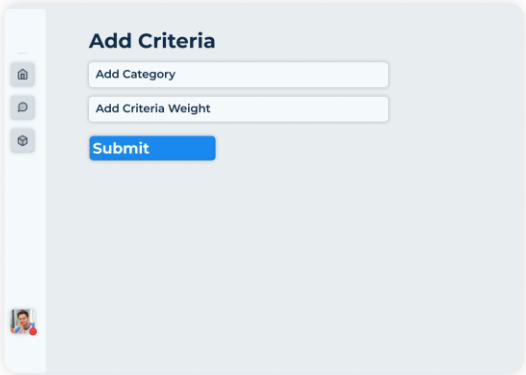

Figure 9. Additional criteria

However, this will change the entire WSM calculation structure which will have to be readjusted by marketing managers.

2. Marketing Manager

Have the authority to enter data obtained based on existing criteria into the "Calculation Data" table in the "WSM Calculation". Marked by the red line in Figure 10. After entering the data, the system will automatically calculate the value of each alternative using the WSM method. In addition, the marketing manager adds criteria and adjusts the formula with the "Master Data" held by the owner. The results can be reported to the owner for further action on the information obtained.

The final stage of this study is formulating analysis and conclusions. The design results provide results that are in accordance with problem-solving needs. Several calculation results are obtained. The results of the DSS calculation are shown in Figure 11 and Table 6.

Master Data

Criteria Weight	0.15	0.1	0.1	0.15	0.1	0.1	0.1	0.05	0.1	0.05	1
Criteria	***Followers Growth Rate (90 Days)***	***Weekly Followers***	***Steady Growth Factor***	***Weekly Engagement Rate***	***Engagement Rate***	***Average Likes***	***Average Comments***	***Weekly Posts***	***Followers Ratio***	***Comments Ratio***	

Figure 7. Master data table

Calculation Data

Criteria Weight	0.15	0.1	0.1	0.15	0.1	0.1	0.1	0.05	0.1	0.05
Account \ Criteria	***Followers Growth Rate (90 Days)***	***Weekly Followers***	***Steady Growth Factor***	***Weekly Engagement Rate***	***Engagement Rate***	***Average Likes***	***Average Comments***	***Weekly Posts***	***Followers Ratio***	***Comments Ratio***
oemahbatiklasem	6.65%	166	83.81%	1.58%	0.10%	31	24	16	7.3	76.8
oemahbajulasem	0	0	100%	4.55%	0.21%	19	20	22	5.5	104.64
oemahbatik_nusantara	0	0	100%	7.04%	0.34%	21	29	21	5.1	138.86
rumahmerahindonesia	7.58%	374	95.93%	1.84%	0.09%	46	26	20	10.5	55.92
batikrumahmerahlasem	10.83%	403	90.43%	1.40%	0.08%	32	17	18	8.4	52.35
MIN	0.00%	0	83.81%	1.40%	0.08%	19	17	16	5.1	52.35
MAX	10.83%	403	100.00%	7.04%	0.34%	46	29	22	10.5	138.86

Figure 10. Additional criteria

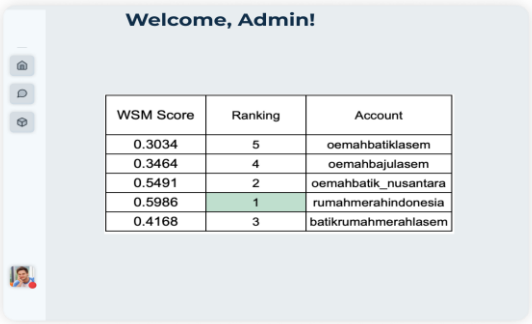

Figure 11. Calculation Result System

Table 6. Calculation Results

WSM Score	Ranking	Account
0.3034	5	oemahbatiklasem
0.3464	4	oemahbajulasem
0.5491	2	oemahbatik_nusantara
0.5986	1	rumahmerahindonesia
0.4168	3	batikrumahmerahlasem

The results show that the highest value is held by the @rumahmerahindonesia account, with a value of 0.5986; this account has the best value on several criteria:

1. Followers Growth Rate (90 Days)
2. Weekly Followers
3. Steady Growth Factor
4. Average Likes
5. Followers Ratio

Meanwhile, the lowest score is held by the account @oemahbatiklasem. With a score of 0.3034, this account has the lowest score in several criteria:

1. Steady Growth
2. Weekly Engagement Rate
3. Engagement Rate
4. Weekly Posts

This shows that the @oemahbatiklasem account needs to improve its performance. One of the things that can be done is to increase the number of weekly posts. If we look at the previous posts, the content that is considered interesting by viewers is content that displays the uniqueness of Lasem culture and its artifacts. Thus, content ideas related to Lasem culture can continue to be explored and developed. The @oemahbatiklasem account has a higher overall Engagement Rate value than the @rumahmerahindonesia account. Thus, the @oemahbatiklasem account has the potential to improve its performance again.

This study highlights critical implications for improving the performance of Batik Rumah Merah's Instagram accounts, particularly @oemahbatiklasem. The account's relatively high Engagement Rate demonstrates its potential to drive better audience interactions if leveraged effectively. To enhance its performance, increasing the frequency of weekly posts and ensuring consistent content production are crucial steps. Moreover, focusing on content that emphasizes the unique cultural aspects of Lasem, such as traditional artifacts and Batik-making stories, can create a stronger connection with the audience and boost engagement metrics. Learning from the success of @rumahmerahindonesia, which excels in follower growth and interaction rates, strategies like maintaining steady follower growth, enhancing direct interactions through giveaways or collaborations, and aligning content with audience interests can be applied. The Decision Support System (DSS) designed in this study provides an adaptable framework for monitoring performance and identifying actionable insights. Batik Rumah Merah can refine its strategies by updating criteria weights and incorporating additional metrics like audience sentiment or post-quality assessments. Additionally, cross-account collaborations and engagement-focused campaigns, particularly for accounts with moderate performance, like @oemahbatik_nusantara, can amplify overall brand reach and engagement. This data-driven approach ensures sustainable growth and strengthens Batik Rumah Merah's presence on social media platforms.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In this study, a decision support system has been designed that can be used to assess the performance of Instagram accounts owned by Batik Rumah Merah based on metrics provided by Instagram. The criteria used are followers growth rate, weekly followers, steady growth factor, weekly engagement rate, engagement rate, average likes, average comments, weekly posts, followers ratio, and comments ratio. The user can determine the weights used. By applying the WSM, the system provides a clear and actionable ranking of five Instagram accounts, enabling the stakeholders to identify strengths and areas for improvement. The calculation method used is the Weighted Sum Model. The system designed with the RAD method is equipped with a business process, making it easier for users. The findings reveal that the @rumahmerahindonesia account achieved the highest overall score, excelling in several key criteria such as follower growth rate and average likes, while the @oemahbatiklasem account scored the lowest, primarily due to inconsistent performance in criteria like steady growth and engagement rate. However, @oemahbatiklasem's relatively high Engagement Rate indicates potential for improvement, particularly through more consistent posting and content tailored to audience interests.

The limitation of this study is the use of the Weighted Sum Model method, which can only

accommodate criteria with the benefit type, namely criteria whose values are higher and better. Overall, the DSS designed in this study provides a robust tool for assessing social media performance, offering actionable insights to improve engagement and optimize account strategies. By leveraging this system, Batik Rumah Merah can strengthen its online presence and align its Instagram activities with broader business objectives.

Recommendations

In further research, other methods can be used to accommodate benefit and cost criteria if cost criteria are used. In addition, additional criteria related to live sales activities on Instagram can be explored, such as the total profit obtained by each account in a certain period of time.

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