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Selection of Thematic Product Promotion Programs to Support Sales Growth

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Abstract

Digital transformation has encouraged public utility companies to adopt measurable promotional strategies to improve sales performance and customer engagement. However, increased promotional expenditure at PT PLN (Persero) UP3 Teluknaga had not consistently generated proportional margin growth, indicating the need for a systematic approach to program prioritization. This study aimed to determine the priority of thematic product promotion programs by considering interdependent managerial criteria. A multi-criteria decision-making approach integrating the Analytic Network Process (ANP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was employed. Primary data were collected through focus group discussions, interviews, and expert-judgment questionnaires involving ten experts with at least five years of relevant experience. Secondary data were obtained from company documents, promotional reports, and relevant literature. The ANP results identified sales impact and thematic products as the highest-priority criterion, followed by PLN Mobile adoption, risk and compliance, target accuracy, operational feasibility, and promotional cost efficiency. TOPSIS ranked digital promotion first, with a preference value of 0.8547, followed by field activation (0.7888), community partnerships (0.6365), outdoor media (0.4995), omnichannel customer relationship management (CRM) (0.3451), and radio promotion (0.0526). Sensitivity analysis confirmed that the rankings remained stable despite variations in criterion weights. These findings indicated that digital promotion should be prioritized to strengthen sales performance, accelerate PLN Mobile adoption, and support more transparent and data-driven promotional decision-making.

INTRODUCTION

Digital transformation in the public utilities sector has fundamentally changed how organizations design services, build customer engagement, and implement measurable, performance-oriented promotional programs (Choirunnisa et al., 2023; Darmawan & Bagia, 2022). PT PLN (Persero), Indonesia's state-owned electricity company, has responded to these dynamics through its Transformation 2.0 agenda, which includes the Growth Moonshots and Digital Moonshots pillars. One of the initiatives under this agenda is the development of the PLN Mobile application as a primary channel for service delivery and the promotion of thematic products (Lesmana & Br Bangun, 2023; Manalu et al., 2023). These thematic products are positioned as instruments to stimulate service utilization while supporting long-term electricity sales growth, particularly within the operational area of PT PLN (Persero) UP3

Teluknaga (Reza & Hertati, 2023; Batubara et al., 2022). However, increases in the intensity and variety of promotional activities have not always been accompanied by proportional improvements in margins and sales growth (Widuri & Widodo, 2023). This condition indicates the need for a systematic assessment to determine priorities among thematic product promotion programs that are more effective, efficient, and aligned with the company's digital transformation objectives.

A commercial business entity is an organizational unit established primarily to generate profit through the production and distribution of goods and/or services (Halim, A., 2015). In carrying out its business activities, a company requires adequate revenue to maintain operational continuity and financial sustainability. Marketing therefore plays an important role in optimizing revenue from the sale and distribution of goods and services (Arumugam et al., 2023; Bulchand-Gidumal et al., 2023; Ridzal et al., 2025; Sharabati et al., 2024; Zolnowski et al., 2016).

Marketing is the process through which companies create value for customers, build strong customer relationships, and capture value from customers in return (Kotler, P., 2018). As a business entity, PT PLN (Persero) must create value for customers while maintaining sufficient economic value to sustain its operations. One of the company's primary responsibilities is to ensure that electricity services remain accessible, reliable, and affordable. Effective and efficient business activities are therefore essential for supporting service accessibility and controlling operational costs. Consequently, promotional and commercial programs must be implemented in a manner that maximizes their contribution to business performance while maintaining cost efficiency (Felix & Rembulan, 2023; Keller & Kotler, 2015).

PT PLN (Persero) is currently implementing Transformation 2.0, which focuses on four main pillars: Growth Moonshots, Digital Moonshots, NZE Moonshots, and Moonshots Launchpad. Under the Growth Moonshots pillar, the company is expected to implement more proactive marketing strategies to increase product utilization and customer-related sales effectively and efficiently. Through Digital Moonshots, PLN continues to accelerate service digitalization through the PLN Mobile application as a primary channel for various services and thematic products. However, the realization of thematic products at PT PLN (Persero) UP3 Teluknaga has remained suboptimal, indicating a gap between promotional implementation and the achievement of sales growth and digital service adoption.

Company data showed that increases in promotional expenditure did not always generate comparable improvements in margins. In 2023, a 3.23% increase in promotional costs was associated with margin growth of 35.70%, whereas in 2024, a larger increase in promotional costs of 8.44% resulted in margin growth of only 15.46%. These figures indicated that the effectiveness of promotional programs varied and that increases in promotional expenditure were not necessarily proportional to the financial outcomes achieved. Therefore, a more appropriate promotional program selection process was required to ensure that available budgets generated optimal results.

The selection of promotional programs constitutes a multi-criteria decision-making problem because it involves several considerations, including sales impact, support for PLN Mobile adoption, cost efficiency, operational feasibility, target accuracy, and implementation risk. At PT PLN (Persero) UP3 Teluknaga, promotional program selection has largely relied

on managerial experience, budget availability, and applicable policies and has not yet been supported by a model capable of evaluating all alternatives systematically. Moreover, promotional alternatives such as digital promotion, field activation, partnerships, radio promotion, and outdoor media possess different strengths and limitations, requiring a more structured and objective evaluation approach (Ascani & Ancillai, 2025; Fuller et al., 2025; Hall et al., 2019; Madondo, 2018).

Based on these conditions, this study applied an integrated Analytic Network Process (ANP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) approach to determine the priority of thematic product promotion programs at PT PLN (Persero) UP3 Teluknaga. The study aimed to identify relevant decision criteria, determine the relative importance of each criterion while considering interdependencies among factors, and generate recommendations regarding the most appropriate promotional programs. The findings were expected to support more objective, effective, and data-driven decision-making while also contributing academically through the application of an integrated ANP–TOPSIS approach in marketing decision analysis.

METHOD

This study employed a multi-criteria decision-making (MCDM) approach by integrating the Analytic Network Process (ANP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) to determine the priority of thematic product promotion programs at PT PLN (Persero) UP3 Teluknaga. The approach was selected because the decision problem involved multiple interrelated criteria. ANP was used to determine criterion weights while accounting for interdependencies among the criteria, whereas TOPSIS was used to rank the promotional alternatives based on their relative closeness to the ideal solution. The integration of these methods provided a systematic and objective basis for prioritizing promotional programs in accordance with the company’s operational conditions.

Data Collection

This study uses primary data and secondary data. Primary data was obtained through Focus Group Discussions (FGDs), interviews, and expert judgement questionnaires involving ten internal experts of PT PLN (Persero) UP3 Teluknaga who have at least five years of experience in marketing, customer service, or product development. The FGD was used to validate the criteria, alternative promotion programs, and the relationship between the criteria, while the questionnaire was used to obtain a paired comparative assessment on the ANP and an alternative assessment on TOPSIS. Secondary data were obtained from internal company documents, promotional reports, as well as various scientific literature that supported the preparation of the research model.

Data Analysis

The data from the FGD was analyzed using NVivo with a directed content analysis approach to identify themes, criteria, and alternative promotional programs. Furthermore, the experts' assessments were combined using geometric mean so that a group assessment matrix was obtained. At the ANP stage, the weight of the criteria is calculated through the preparation of pairwise comparison, consistency testing, the formation of a supermatrix, until the global weight of each criterion is obtained. The weight is then used in the TOPSIS method to calculate the preference value of each alternative based on positive and negative ideal solutions so that

the priority order of the promotion program is obtained. To ensure the reliability of the model, sensitivity analysis was performed by changing the weight of the criteria and observing changes in alternative ratings.

Research Stages

The research begins with a literature study and analysis of company documents to develop criteria and alternative promotional programs. Furthermore, an FGD was conducted with experts to validate the research model. Based on the results of the FGD, an expert judgement instrument was prepared which was then distributed to the respondents. The data obtained were analyzed using the ANP method to determine the weight of the criteria and the TOPSIS method to determine the alternative priorities of the promotion program. The results of the ranking were then validated with the management of PT PLN (Persero) UP3 Teluknaga and were complemented by sensitivity analysis before compiling managerial recommendations.

RESULTS AND DISCUSSION

This study aims to determine the priorities of the thematic product promotion program of PT PLN (Persero) UP3 Teluknaga by integrating the Analytic Network Process (ANP) method for weighting criteria and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) for ranking alternative programs. [Laughs] The decision object consists of six criteria, namely sales impact and thematic products (C1), PLN Mobile adoption (C2), promotion cost efficiency (C3), operational feasibility (C4), target reach and accuracy (C5), and risk and compliance (C6), with six alternative programs, namely digital promotion (A1), field activation (A2), community partnerships (A3), radio (A4), omni-channel CRM (A5), and outdoor media (A6).

The research data was obtained through the assessment of ten experts on the paired comparison between criteria and alternative assessments on each criterion. The results of the processing showed that the research succeeded in producing consistent criteria weights and alternative priority sequences that could be used as a basis for promotion decision-making within PT PLN (Persero) UP3 Teluknaga.

Results of Weighting Criteria with ANP

In the interview session of each expert, pairwise comparison interdependency data was also taken.Then from these data, aggregation can be calculated on the results of all experts.

1. Agregasi Pairwise Comparison Interdependency

From the results of the interview, a pairwise comparison interdependency matrix was obtained for each expert, then then aggregated using geometric means. The aggregation results can be seen in Table 1 to Table 4.31.

Table 1. Column C1 Affected by C2, C5 and C6

				Normalization			**BRK**	**NJT**	**NJT/ BRK**
	C2	**C5**	**C6**	**C2**	**C5**	**C6**			
C2	1,00	3,30	5,93	0,68	0,71	0,61	**0,67**	**2,03**	**3,04**
C5	0,30	1,00	2,83	0,21	0,22	0,29	**0,24**	**0,72**	**3,02**
C6	0,17	0,35	1,00	0,11	0,08	0,10	**0,10**	**0,29**	**3,01**
	1,47	4,65	9,76	1,00	1,00	1,00	1,00	3,03	3,03

In detail, the Mean Weight of the Criterion (BRK) of C2 of 0.67 indicates that changes

in C2 contribute the most to changes in C1 compared to C5 and C6. C5 has a weight of 0.24, so its effect on C1 is moderate, while C6 with a weight of 0.10 shows a relatively weak effect on C1. The almost identical eigenvalue (NJT/BRK) for all three criteria (about 3.0) confirms that this comparative structure is consistent, so that the priority order of the influence of C2 > C5 > C6 on C1 is logically acceptable. The test results showed an aggregate CR value of 2.0 percent.

Table 2. Column C2 Affected by C1 and C5

			Normalization		BRK
	C1	**C5**	**C1**	**C5**	
C1	1,00	3,59	0,78	0,78	**0,78**
C5	0,28	1,00	0,22	0,22	**0,22**
	1,28	4,59	1,00	1,00	1,00

In detail, the matrix shows that in relation to C2, criterion C1 has an Average Criterion Weight (BRK) of 0.78, while C5 is only 0.22. This means that changes or improvements to C1 contribute to C2 much more than changes to C5. The normalization value of each column is also consistent (the number of columns is 1), and since the matrix is only 2×2 in size, according to Saaty's theory the matrix is always consistent so no further consistency test is needed.

Table 3. Column C3 Affected by C4 and C6

			Normalization		BRK
	C4	**C6**	**C4**	**C6**	
C4	1,00	4,67	0,82	0,82	**0,82**
C6	0,21	1,00	0,18	0,18	**0,18**
	1,21	5,67	1,00	1,00	1,00

The Mean Weight Criterion (BRK) value of C4 of 0.82 indicates that C4 accounts for about 82% of the influence on C3, while C6 is only about 18% with a BRK of 0.18. The normalization value in each column is also 1, so the structure of the C4 to C6 comparison is consistent, and since the matrix used is 2×2, this assessment is acceptable without the need for additional consistency tests. Thus, in the context of the ANP network you are building, changes in C4 will be much more decisive for changes in C3 than changes in C6.

Table 4. Column C4 Affected by C3 and C6

			Normalization		BRK
	C3	**C6**	**C3**	**C6**	
C3	1,00	3,50	0,78	0,78	**0,78**
C6	0,29	1,00	0,22	0,22	**0,22**
	1,29	4,50	1,00	1,00	1,00

In column C4, the influencing criteria were C3 and C6, with the relative weight results showing that C3 had a BRK of 0.78, while C6 was 0.22. This means that C4 is more predominantly influenced by C3 than by C6, so changes in C3 will have a greater impact on C4. Because the matrix used is 2×2 in size, according to Saaty's theory, this matrix is always consistent and the weighting results can be received immediately.

Table 5. Column C5 Affected by C1 and C2

			Normalization		BRK
	C1	**C2**	**C1**	**C2**	
C1	1,00	3,13	0,76	0,76	**0,76**
C2	0,32	1,00	0,24	0,24	**0,24**
	1,32	4,13	1,00	1,00	1,00

In column C5, the influencing criteria were C1 and C2, with BRK values of 0.76 for C1 and 0.24 for C2, respectively. These results show that C5 is more strongly influenced by C1 than C2, so C1's contribution in forming or influencing C5 is much greater than C2's. Since the comparison matrix consists of only two elements, it is automatically consistent according to Saaty's theory.

Table 6. Column C6 Affected by C1 and C4

			Normalization		BRK
	C1	**C4**	**C1**	**C4**	
C1	1,00	4,29	0,81	0,81	**0,81**
C4	0,23	1,00	0,19	0,19	**0,19**
	1,23	5,29	1,00	1,00	1,00

In column C6, the influencing criteria were C1 and C4, with a relative weights of 0.81 for C1 and 0.19 for C4. Thus, C6 is more predominantly influenced by C1 than C4, which means that changes in C1 will be more decisive for C6 than changes in C4. Just like other 2×2 matrices, these results are also theoretically consistent so they do not require further consistency testing.

2. Unweighted Supermatrix dan Weighted Supermatrix

From the results of the Pairwise Comparison Interdependency Aggregation, the Unweighted Supermatrix as shown in Table 7 was obtained.

Table 7. Unweighted Supermatrix

	C1	**C2**	**C3**	**C4**	**C5**	**C6**
C1	-	0,782077	-	-	0,758046	0,810949
C2	0,665387	-	-	-	0,241954	-
C3	-	-	-	0,777622	-	-
C4	-	-	0,823598	-	-	0,189051
C5	0,236955	-	-	-	-	-
C6	0,097659	0,217923	0,176402	0,222378	-	-

Based on the Unweight Supermatrix Table, it can be seen that the structure of the decision network formed shows a strong relationship of dependency and feedback between criteria. C1 is mainly influenced by C2, C5, and C6 with relatively high weights, while C2 is predominantly influenced by C1, thus forming mutually reinforcing relationships. On the other hand, C3 and C4 also influence each other with great weight, whereas C6 receives the cumulative influence of several criteria at once (C1, C2, C3, and C4). This pattern confirms that the assessment process is no longer linear-hierarchical, but reflects the characteristics of the network in the Analytic Network Process, where each criterion can be a cause as well as a consequence of the others.

The unweighted and weight supermatrix in the table illustrate the strength of influence between criteria in the developed ANP network. Since there is only one cluster of criteria, the value in the weight supermatrix is identical to the unweight supermatrix so that each element directly represents the relative influence of one criterion on other criteria in the system.

3. Limit Supermatrix Calculation

The next stage after the preparation of the supermatrix weight is to calculate the supermatrix limit, so that the global priority of each criterion in the ANP network is obtained. Based on the normalized supermatrix weight, each line element represents the relative influence of one criterion on other criteria in the system. This matrix is then raised repeatedly until it reaches a convergent state, i.e. when the change in values between iterations is no longer significant. The ranking process results in a stationary supermatrix limit, where each column has the same value and represents a final priority weight vector that integrates all dependency relationships in the decision-making network.

Table 8. First iteration

	C1	C2	C3	C4	C5	C6
C1	0,779202	0,176725	0,143053	0,180338	0,189226	-
C2	0,057332	0,520384	-	-	0,504394	0,539595
C3	-	-	0,640448	-	-	0,147010
C4	0,018462	0,041199	0,033349	0,682489	-	-
C5	-	0,185317	-	-	0,179623	0,192158
C6	0,145003	0,076376	0,183150	0,137174	0,126757	0,121237

Table 9. Second iteration

	C1	C2	C3	C4	C5	C6
C1	0,620618	0,272165	0,209099	0,263598	0,270574	0,152751
C2	0,152751	0,415616	0,107029	0,084357	0,432325	0,443139
C3	0,021317	0,011228	0,437099	0,020166	0,018635	0,111975
C4	0,029348	0,052819	0,046760	0,469120	0,024274	0,027133
C5	0,038488	0,144399	0,035194	0,026359	0,150094	0,157809
C6	0,137478	0,103772	0,164821	0,136400	0,104098	0,107193

Table 10. Third iteration

	C1	C2	C3	C4	C5	C6
C1	0,470347	0,353220	0,297322	0,342396	0,352395	0,305046
C2	0,240604	0,328381	0,215403	0,188897	0,336073	0,337508
C3	0,040966	0,030752	0,216769	0,040606	0,033710	0,072667
C4	0,045711	0,061565	0,059491	0,237550	0,049503	0,052593
C5	0,074939	0,110327	0,071411	0,060883	0,113093	0,115126
C6	0,127432	0,115756	0,139605	0,129669	0,115227	0,117060

Table 11. Fourth iteration

	C1	C2	C3	C4	C5	C6
C1	0,399325	0,386539	0,368499	0,382186	0,386430	0,378584
C2	0,277831	0,287220	0,271318	0,262256	0,288657	0,288013
C3	0,049190	0,045865	0,080760	0,049758	0,046274	0,053150
C4	0,060020	0,064366	0,064757	0,095960	0,062222	0,063395
C5	0,090647	0,094447	0,089296	0,085676	0,094963	0,094984
C6	0,122988	0,121563	0,125369	0,124164	0,121454	0,121874

Table 12. Fifth iteration

	C1	C2	C3	C4	C5	C6
C1	0,389508	0,389396	0,388505	0,389113	0,389398	0,389165
C2	0,281418	0,281487	0,281087	0,280666	0,281535	0,281471
C3	0,050076	0,049925	0,051110	0,050185	0,049930	0,050152
C4	0,064233	0,064417	0,064529	0,065452	0,064349	0,064423
C5	0,092263	0,092291	0,092176	0,092008	0,092309	0,092293
C6	0,122504	0,122483	0,122593	0,122576	0,122479	0,122497

In the fifth iteration, the values in each column indicate that the weight of each criterion has stabilized, marked by nearly identical numbers between columns for the same row.

Specifically, criterion C1 has a weight of about 0.389, followed by C2 about 0.281, C6 about 0.123, C5 about 0.092, C4 about 0.064, and C3 about 0.050. This finding indicates that in the context of PT PLN (Persero) UP3 Teluknaga, the prioritized promotional program is the program that has the greatest ability to encourage the sale of thematic products, while strengthening the adoption of PLN Mobile's digital channel and maintaining promotion cost efficiency.

From a managerial point of view, the C1 weight is much higher than other criteria indicating a strong decision orientation to measurable business results. The weight of C2, which occupies the second position, shows that digital transformation through PLN Mobile is not only a supporting instrument, but also one of the outcome programs that is considered important for long-term growth.

Alternative Assessment Results on Each Criterion

Before the TOPSIS ranking, all alternative programs were assessed by experts on each criterion. The results of each expert's assessment can be seen in Table 13 to Table 18.

Table 13. Criterion C1 – Sales Impact and Thematic Products

No.	Alternatif	Expression 1	Expression 2	Expression 3	Expression 4	Expression 5	Expression 6	Expression 7	Expression 8	Expression 9	Exp 10
1	A1	5	5	5	4	5	5	5	5	4	3
2	A2	5	3	5	4	5	3	5	5	4	4
3	A3	3	4	5	4	3	3	5	5	4	4
4	A4	2	3	4	3	3	2	3	4	3	1
5	A5	4	2	3	3	5	3	4	5	4	1
6	A6	4	3	4	3	5	4	4	5	4	1

Table 14. Criterion C2 – PLN Mobile Adoption

No.	Alternatif	Expression 1	Expression 2	Expression 3	Expression 4	Expression 5	Expression 6	Expression 7	Expression 8	Expression 9	Exp 10
1	A1	5	5	5	4	5	5	5	5	4	3
2	A2	5	3	5	4	5	3	5	5	4	4
3	A3	3	4	5	4	3	3	5	5	4	4
4	A4	2	3	4	3	3	2	3	4	3	1
5	A5	4	2	3	3	5	3	4	5	4	1
6	A6	4	3	4	3	5	4	4	5	4	1

Table 15. Criterion C3 – Promotion Cost Efficiency

No.	Alternatif	Expression 1	Expression 2	Expression 3	Expression 4	Expression 5	Expression 6	Expression 7	Expression 8	Expression 9	Exp 10
1	A1	5	5	5	4	5	5	5	5	4	3
2	A2	5	3	5	4	5	3	5	5	4	4
3	A3	3	4	5	4	3	3	5	5	4	4
4	A4	2	3	4	3	3	2	3	4	3	1
5	A5	4	2	3	3	5	3	4	5	4	1
6	A6	4	3	4	3	5	4	4	5	4	1

Table 16. Criterion C4 – Operational Feasibility

No.	Alternatif	Expression 1	Expression 2	Expression 3	Expression 4	Expression 5	Expression 6	Expression 7	Expression 8	Expression 9	Exp 10
1	A1	5	5	5	4	5	5	5	5	4	3
2	A2	5	3	5	4	5	3	5	5	4	4
3	A3	3	4	5	4	3	3	5	5	4	4
4	A4	2	3	4	3	3	2	3	4	3	1
5	A5	4	2	3	3	5	3	4	5	4	1
6	A6	4	3	4	3	5	4	4	5	4	1

Table 17. Criterion C5 – Target Reach and Accuracy

No.	Alternatif	Expression 1	Expression 2	Expression 3	Expression 4	Expression 5	Expression 6	Expression 7	Expression 8	Expression 9	Exp 10
1	A1	5	5	5	4	5	5	5	5	4	3
2	A2	5	3	5	4	5	3	5	5	4	4
3	A3	3	4	5	4	3	3	5	5	4	4
4	A4	2	3	4	3	3	2	3	4	3	1
5	A5	4	2	3	3	5	3	4	5	4	1
6	A6	4	3	4	3	5	4	4	5	4	1

Table 18. Criterion C6 – Risk and Compliance

No.	Alternatif	Expression 1	Expression 2	Expression 3	Expression 4	Expression 5	Expression 6	Expression 7	Expression 8	Expression 9	Exp 10
1	A1	5	5	5	4	5	5	5	5	4	3
2	A2	5	3	5	4	5	3	5	5	4	4
3	A3	3	4	5	4	3	3	5	5	4	4
4	A4	2	3	4	3	3	2	3	4	3	1
5	A5	4	2	3	3	5	3	4	5	4	1
6	A6	4	3	4	3	5	4	4	5	4	1

Then all alternative programs are assessed by experts on each criterion are aggregated.

1. Alternative Aggregation

Before the TOPSIS ranking, all alternative programs were assessed by experts on each

criterion, then aggregated using arithmetic means. The aggregation can be seen in Table 4.43.

Table 19. Alternative Aggregation

Alternatif	Criteria					
	C1: Sales impact and thematic products	C2: Adoption of PLN Mobile	C3: Promotion cost efficiency	C4: Operational feasibility	C5: Target accuracy	C6: Risk and compliance
A1 – Promosi digital	4,60	4,50	4,20	4,40	4,50	3,40
A2 – Field activation	4,30	4,50	4,20	4,20	4,30	3,70
A3 – Community partnerships	4,00	4,00	3,80	4,00	4,00	3,30
A4 – Radio	2,80	3,00	3,10	3,50	3,30	3,20
A5 – Omni-channel CRM	3,40	3,60	3,40	3,90	4,00	3,10
A6 – Outdoor media	3,70	4,00	3,60	3,80	3,70	3,30

Descriptively, A1 stands out on C1, C2, C4, and C5. A2 also shows high performance and is relatively balanced, especially because it has a competitive score on C1, C2, C3, and a higher score on C6 compared to other alternatives. Meanwhile, A4 tends to be at the bottom of almost all criteria, indicating the limitations of radio in addressing the need for thematic product promotion that demands measurable reach, digital support, and direct business impact.

2. Matrix Normalization

The first stage of the data normalization process in the TOPSIS method begins with the calculation of the squared value for each alternative and criterion, then followed by a scale process using vector normalization. The value in the "Criteria after ranking" section shows the initial score of each alternative (A1–A6) against criteria C1 to C6 before normalization, while the last row in the section contains the number of squares of each column used as denominators in the normalization formula.

Based on the classification in Table 4.37, this study uses five benefit criteria, namely the Impact of kWh Sales and Thematic Products, PLN Mobile Adoption, Promotion Cost Efficiency, Operational Feasibility, and Target Accuracy, as well as one cost criterion, namely Risk and Compliance. This classification is the basis for the formation of positive ideal solutions and negative ideal solutions in the TOPSIS process.

Table 20. Calculation of the lifted value (square)

Alternatif	Criteria After Promotion					
	C1: Sales impact and thematic products	C2: Adoption of PLN Mobile	C3: Promotion cost efficiency	C4: Operational feasibility	C5: Target accuracy	C6: Risk and compliance
A1 – Promosi digital	4,60	4,50	4,20	4,40	4,50	3,40
A2 – Field activation	4,30	4,50	4,20	4,20	4,30	3,70
A3 – Community partnerships	4,00	4,00	3,80	4,00	4,00	3,30
A4 – Radio	2,80	3,00	3,10	3,50	3,30	3,20
A5 – Omni-channel CRM	3,40	3,60	3,40	3,90	4,00	3,10
A6 – Outdoor media	3,70	4,00	3,60	3,80	3,70	3,30

square	9,42	9,72	9,16	9,74	9,76	8,18

Next, the "Criteria after normalization" section displays the results of the division of each alternative score by the root of the number of squares in the corresponding criteria column, resulting in a normalized value that is on a scale of 0 to 1. This procedure ensures that the difference in unit and scale between criteria (e.g. between sales impact, cost efficiency, and risk) no longer affects the measurement results, so that all criteria can be compared proportionally in the same decision space.

Table 21. Criteria Matrix After Normalization

Alternatif	**Criteria After Normalization**					
	C1: Sales impact and thematic products	C2: Adoption of PLN Mobile	C3: Promotion cost efficiency	C4: Operational feasibility	C5: Target accuracy	C6: Risk and compliance
A1 – Promosi digital	0,49	0,46	0,46	0,45	0,46	0,42
A2 – Field activation	0,46	0,46	0,46	0,43	0,44	0,45
A3 – Community partnerships	0,42	0,41	0,41	0,41	0,41	0,40
A4 – Radio	0,30	0,31	0,34	0,36	0,34	0,39
A5 – Omni-channel CRM	0,36	0,37	0,37	0,40	0,41	0,38
A6 – Outdoor media	0,39	0,41	0,39	0,39	0,38	0,40

3. Formation **of a Weighted Decision Matrix**

The next stage is the process of forming a weighted decision matrix by multiplying the normalized matrix value on each criterion by the weight of global preferences obtained from the results of ANP analysis.

Table 22. Criteria after multiplying the weight of preference

Alternatif	**Criteria after multiplying by the weight of the prevalence**					
	C1: Sales impact and thematic products	C2: Adoption of PLN Mobile	C3: Promotion cost efficiency	C4: Operational feasibility	C5: Target accuracy	C6: Risk and compliance
A1 – Promosi digital	0,18	0,09	0,07	0,05	0,04	0,03
A2 – Field activation	0,17	0,09	0,07	0,05	0,04	0,03
A3 – Community partnerships	0,16	0,08	0,07	0,05	0,04	0,03
A4 – Radio	0,11	0,06	0,05	0,04	0,03	0,03
A5 – Omni-channel CRM	0,13	0,07	0,06	0,05	0,04	0,03
A6 – Outdoor media	0,14	0,08	0,06	0,04	0,03	0,03
Weight Preference - W	36,86%	18,98%	16,03%	11,51%	9,23%	7,39%

The weight of preference for each criterion was 36.86% for C1 (sales impact and thematic products), 18.98% for C2 (PLN Mobile adoption), 16.03% for C3 (promotional cost efficiency), 11.51% for C4 (operational feasibility), 9.23% for C5 (target accuracy), and 7.39% for C6 (risk and compliance). This multiplication between the normalization value and the weight results in a matrix of "criteria after multiplied by the weight of preference", where each element describes the weighted contribution of an alternative to each criterion in an already comparable unit.

For example, alternative A1 (digital promotion) has a weighted value of 0.18 on C1, 0.09

on C2, and 0.07 on C3, which reflects that the contribution of digital promotions to sales impact is relatively greater than its effect on PLN Mobile adoption and promotion cost efficiency. A similar pattern is seen in the other alternatives (A2 to A6), so the weighted decision matrix generated at this stage becomes the basis for calculating the distance to the positive and negative ideal solutions in the next TOPSIS step.

4. Search for the Ideal Solution

The next stage is the process of determining the positive ideal solution (A^+) and the negative ideal solution (A^-) within the framework of the TOPSIS method. The positive ideal solution is obtained by selecting the highest value of the weighted decision matrix for each criterion, represented by the vector $Y1^+$ to $Y6^+$, while the negative ideal solution is determined from the lowest value for each criterion represented by $Y1^-$ to $Y6^-$.

Table 23. Table of Ideal Solutions

Ideal Positive Solution		**Negative Ideal Solutions**	
Y1+	0,18	Y1-	0,11
Y2+	0,09	Y2-	0,06
Y3+	0,07	Y3-	0,05
Y4+	0,05	Y4-	0,04
Y5+	0,04	Y5-	0,03
Y6-	0,03	Y5+	0,03
A+		A-	
{0,18; 0,09; 0,07; 0,05; 0,04; 0,03}		{0,11; 0,06; 0,05; 0,04; 0,03; 0,03}	

In the context of this study, the vector A+ = {0.18; 0.09; 0.07; 0.05; 0.04; 0.03} represents the most desirable combination of conditions for all criteria, i.e. the reference point that describes the best performing alternative in each dimension of the assessment as shown in Table 4.47. In contrast, the vector A− = {0.11; 0.06; 0.05; 0.04; 0.03; 0.03} describes the combination of the least desirable conditions, i.e. the lowest-performing alternatives in each criterion. These two vectors are then used as a basis for calculating the distance of each alternative to the ideal solution of positive and negative, so that a measure of relative closeness (closeness coefficient) can be obtained that determines the final ranking of the promoted program being evaluated.

5. Calculating **Distance to the Ideal Solution**

The next stage is to calculate the distance of each alternative to the positive ideal solution (Di^+) and the negative ideal solution (Di^-) in the TOPSIS method. Values $D1^+$ to $D6^+$ indicate how far each alternative is from the best condition (A^+), while $D1^-$ to $D6^-$ represents the distance of each alternative from the worst condition (A^-). The smaller the value of Di^+ and the greater the value of Di^-, the alternative in question is closer to the positive ideal solution and the farther away from the negative ideal solution, so preferentially it is more desirable.

Table 24. Calculating Distance to the Ideal Solution

D1+	**0,0136454**
D2+	0,0186080
D3+	0,0303708
D4+	0,0813922
D5+	0,0540712
D6+	0,0417665
D1-	0,0802433
D2-	0,0695109
D3-	0,0531804
D4-	0,0045170
D5-	0,0284882
D6-	0,0416906

Next, the total preference value for each alternative (Vi) is calculated using the ratio between Di^- and the sum of $Di^+ + Di^-$, as shown in the formula to the right of the table. A larger Vi value indicates that the alternative has a higher relative proximity to the positive ideal solution than the other alternatives, so it can be concluded as a more prioritized alternative in the context of the selection of the promotional program being studied.

6. Determination **of Preference Values and Alternative Ratings**

The last stage in the TOPSIS method is the determination of the preference value (Vi) for each alternative based on the combination of distances to positive and negative ideal solutions. The value of Vi is obtained from the ratio between the distance of the alternative to the negative ideal solution and the sum of the distance to the ideal solution of positive and negative, so the greater the value of Vi indicates that the closer the alternative is to the ideal condition and the farther away from the undesirable condition.

Table 25. Table of Preferences

	Weight	**Rangking**
V1	0,854663971	1
V2	0,788831097	2
V3	0,636500882	3
V4	0,052579176	6
V5	0,345063495	5
V6	0,499545462	4

Based on the Stage 5 Table, the highest preference value was obtained by V1 of 0.8547, followed by V2 of 0.7888, V3 of 0.6365, V6 of 0.4995, V5 of 0.3451, and the lowest V4 of 0.0526. This order indicates that the alternative representing V1 is the most prioritized promotional program, followed in order by the V2, V3, V6, and V5 alternatives, while the V4 alternative has the lowest level of preference and is the least recommended option in the context of this study.

Problem Owners and Decision Beneficiaries

The results of this study resulted in priority recommendations for thematic product promotion programs intended as decision support tools for the management of PT PLN

(Persero) UP3 Teluknaga. The main problem in this study is to determine the most effective promotion program among the various available alternatives by considering various interrelated criteria. Therefore, the problem owner as well as the decision maker is the management of PT PLN (Persero) UP3 Teluknaga, especially the unit responsible for planning, implementing, and evaluating marketing activities and sales of thematic products.

In the organizational structure, the results of this research can be used by UP3 Managers, Assistant Managers of Marketing and Customer Service, and Marketing Supervisors as a basis for compiling promotion program priorities, determining promotion budget allocations, and establishing marketing programs that support increasing kWh sales and thematic products.

Apart from being the basis for decision-making at the operational level, the results of this study also provide benefits for the Banten Distribution Main Unit (UID) as an evaluation material for the preparation of promotional policies in service units that have similar customer characteristics. Thus, the resulting recommendations not only support the effectiveness of promotions at UP3 Teluknaga, but also have the potential to be a reference in the preparation of promotional programs in other PLN work units.

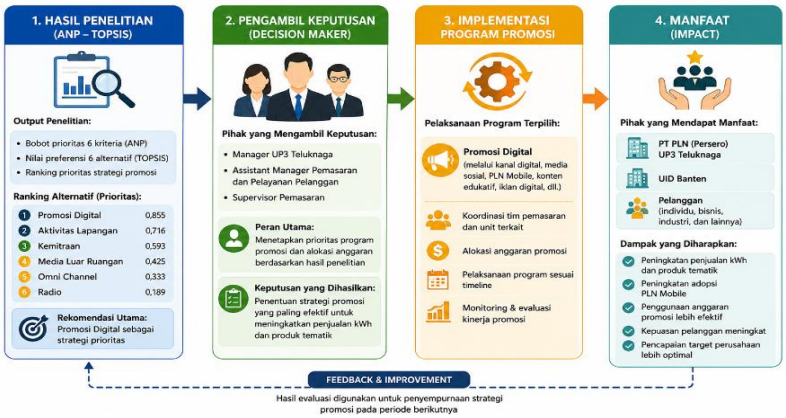

Figure 1. Research Flow

The implementation of this research recommendation is expected to increase the effectiveness of the use of promotional budgets, accelerate the adoption of PLN Mobile, increase the realization of thematic product sales and electrical energy consumption (kWh), and support data-driven marketing transformation within PT PLN (Persero).

Table 26. Problem Owners and Decision Beneficiaries

Aspects	Research Results
Problem Owner	PT PLN (Persero) UP3 Teluknaga
Decision Maker	UP3 Manager, Marketing & Customer Service Assistant Manager, Marketing Supervisor
Supported Decisions	Determine the priorities of thematic product promotion programs and promotional budget allocations
Beneficiaries	UP3 Teluknaga, UID Banten, as well as customers through more targeted promotions
Expected Impact	Increased kWh sales, thematic products, PLN Mobile adoption, and promotional cost effectiveness

The problem owner of this research is the management of PT PLN (Persero) UP3 Teluknaga as the party that sets the promotion program. The results of the research are used as

a basis for determining the priority of the promotion program. The expected benefits are increased sales of kWh and thematic products, PLN Mobile adoption, promotion effectiveness, and customer satisfaction through more targeted promotions.

Dominance of sales impact criteria

Dominance of Seller Impact (C1) emphasized that promotion decision-making at PT PLN (Persero) UP3 Teluknaga is strongly oriented towards achieving final results in the form of sales growth and thematic product realization. This is consistent with the background of research that highlights that increased promotional costs do not always result in comparable margins and growth, so promotional programs need to be geared towards options that actually produce measurable business impact.

Conceptually, this result also strengthens the reason for ANP's election. In the context of public utilities that are undergoing digital transformation, the impact of sales does not stand alone, but is influenced by the organization's ability to utilize digital channels, resource efficiency, and readiness for implementation.

The importance of PLN Mobile adoption as an enabler programs

The weight of PLN Mobile Adoption (C2) which occupies the second position shows that the increase in PLN Mobile adoption is seen as a program factor, not just an additional operational variable. PLN Mobile functions as a channel for customer interaction, transactions, and activations that have the potential to strengthen the effectiveness of thematic promotions in the medium and long term.

Therefore, a strong alternative in the digital dimension will gain a comparative advantage in the decision model. This helps explain why digital promotion ranks first and field activations that can be combined with digital activations rank second.

The advantages of digital promotion as the main program

Digital promotions rank first because they have the highest or near the highest performance on all criteria with a large weight, especially C1, C2, C4, and C5. This advantage shows that digital promotion is not only effective in reaching customers widely and on target, but also relatively easy to implement and in line with PLN's service digitization agenda.

In a managerial context, this program is most likely to be integrated with the PLN Mobile ecosystem, social media, CRM, and moment-based thematic promotional campaigns. Therefore, digital promotion deserves to be the main program in the thematic product promotion portfolio of PT PLN (Persero) UP3 Teluknaga.

Field activation and partnerships as supporting programs

Field activation ranks second with a preference value of 0.7888, just slightly below digital promotion. This shows that hands-on interaction in the field is still very relevant, especially for thematic products that require education, a personalized approach, or a demonstration of benefits to the target customer.

Community partnerships are ranked third and can be understood as an effective support program to expand trust and penetrate certain markets. This program has strong potential for community-based segments, residential areas, associations, and customer groups with high social proximity.

Other alternative positions

Outdoor media is in fourth place with an almost balanced preference value between the distance to the ideal solution, positive and negative. This shows that outdoor media is still

relevant as a support program for building awareness, but it is not strong enough when used as the main program without a combination of other channels.

Omni-channel CRM ranks fifth, indicating that while this approach has value in terms of customer relationships and reach, it has not performed as well as that of direct digital programs or field activations in the data conditions of this study. Radio ranks last because it is weak on high-weighted criteria, especially the impact of sales, digital adoption, and accuracy of targets.

Managerial implications

The results of the study show that Digital Promotion is the highest priority promotion program based on the integration of the ANP TOPSIS method. The implementation of these recommendations has managerial implications for the aspects of programs, operations, organization, and resource management at PT PLN (Persero) UP3 Teluknaga.

1. Implications of Programs

The designation of Digital Promotion as the main program requires management to change the orientation of promotion from a conventional approach to a digital-first marketing program. This policy directs most promotional activities through PLN Mobile, social media, websites, and other digital channels so that the delivery of information becomes wider, faster, measurable, and in accordance with customer behavior.

The consequence of the implementation of this program is the need to change priorities in the preparation of marketing work programs and allocate a larger promotional budget to digital media than conventional media.

2. Operational Implications

The implementation of Digital Promotion requires operational readiness in the form of increasing human resource competence, providing quality digital content, sustainable social media management, and the use of customer data in determining promotion goals.

In addition, coordination between the marketing unit, customer service, and PLN Mobile managers needs to be strengthened so that all promotional activities support increasing sales of thematic products while increasing the use of PLN digital services.

The consequence is the increasing need for cross-functional coordination and increasing the capacity of human resources in the field of digital marketing.

3. Implications of Budget Management

The results of the study show that promotional programs no longer only consider the magnitude of the cost of promotion, but rather emphasize the effectiveness of achieving the company's goals.

The implementation of the research results allows management to reallocate promotional budgets to programs that have a higher priority value so that the use of the budget becomes more effective and directed.

The consequence is a reduced budget allocation to low-effectiveness promotional media, such as radio, as well as increased investment in digital media that has the potential to produce a greater sales impact.

4. Implications of Decision Making

This research produces a decision model based on ANP TOPSIS which can be used as a Decision Support System (DSS) in the process of preparing promotional programs.

With this model, the decision-making process is no longer based only on experience or subjective considerations, but is supported by a scientific approach that considers the

relationship between criteria and an objective evaluation of all alternatives.

The consequence is increased transparency, consistency, and accountability in setting promotion program priorities.

5. Implications for Company Performance

If research recommendations are implemented consistently, companies have the potential to gain several benefits, namely increased kWh sales and thematic products, increased adoption of PLN Mobile, effectiveness of the use of promotional budgets, increased accuracy of promotional targets, and improved quality of marketing decision-making.

However, the implementation of the program also has consequences in the form of investment needs in the development of human resource competencies, the provision of digital infrastructure, and changes in work culture towards data-driven marketing.

The results of the sensitivity analysis give confidence to the management that the recommendations of the promotion program produced do not depend on one specific criterion, but are the results of an evaluation that considers all aspects of the decision in a balanced manner. Thus, the recommendation of Digital Promotion as a top priority can be used as the basis for the preparation of promotion policies with a high level of trust.

In addition, the stability of the ranking results shows that changes in organizational priorities, such as increased focus on cost efficiency, adoption of PLN Mobile, and risk management, will not change the main recommended programs. This provides flexibility for PT PLN (Persero) UP3 Teluknaga in adjusting promotion policies according to organizational dynamics without reducing the quality of the decisions produced.

Overall, the sensitivity analysis proves that the ANP-TOPSIS integration model developed in this study has a high level of stability and is able to produce objective, consistent, and reliable promotion program recommendations as a basis for managerial decision-making.

CONCLUSION

Based on the results of the analysis, this study determined the priority of thematic product promotion programs at PT PLN (Persero) UP3 Teluknaga using an integrated ANP–TOPSIS approach. The study identified six main criteria: the impact on kWh sales and thematic products, PLN Mobile adoption, promotional cost efficiency, operational feasibility, target accuracy, and risk and compliance. Six promotional alternatives were identified through a literature review, observation, and expert validation through focus group discussions (FGDs). The ANP results showed that the impact on kWh sales and thematic products was the highest-priority criterion, followed by PLN Mobile adoption, risk and compliance, target accuracy, operational feasibility, and promotional cost efficiency. The TOPSIS results ranked digital promotion as the highest-priority alternative, followed by field activation, partnerships, outdoor media, omnichannel customer relationship management (CRM), and radio promotion. Sensitivity analysis showed that variations in criterion weights did not alter the ranking of the promotional alternatives, indicating that the integrated ANP–TOPSIS model was robust and capable of providing objective, consistent, and reliable recommendations for managerial decision-making. Therefore, PT PLN (Persero) UP3 Teluknaga should prioritize digital promotion strategies oriented toward increasing sales and PLN Mobile adoption while strengthening risk management and compliance. The findings may also serve as a basis for developing more transparent and data-driven promotional strategies. Future research should

expand the scope of the study, involve a broader range of cross-functional experts, conduct more comprehensive sensitivity analyses, and incorporate actual customer behavioral data to improve the adaptability, accuracy, and broader applicability of the decision-making model.

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