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ANALYSIS OF ALTERNATIVE STRATEGIES FOR DOMESTIC WASTEWATER SYSTEMS MANAGEMENT AND DEVELOPMENT IN REGENCY/CITY GOVERNMENTS (CASE STUDY: SOUTH TANGERANG CITY, BANTEN PROVINCE)

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ABSTRACT

The impact of high urban population growth and increasing development activities in various sectors causes various problems in urban areas, one of which is wastewater pollution. Through the "Wastewater System Management and Development Program", where the planning activity program must be able to improve the management and development of domestic wastewater systems. Based on the results of the analysis in the application of planning activity programs in the study area, it can be influenced by several aspects, namely law &regulatory, technological/technical, institutional, community participation, environment and financing, with the highest participation rate in internal indicators of 52.45%, while external indicators of 47.55%. Meanwhile, the variables that have been identified based on the participation of the city government and community stakeholders in the management and development of the SPALD case study of South Tangerang City obtained for the identification analysis of the IFE matrix are 3.11 and EFE 2.79 so that the position of the main Planning Activity Program of South Tangerang City is in quadrant IV (growth and development strategy), while for SWOT quadrant analysis the axis value (X) is 1.02 and the axis (Y) is 0.99 so that the position of the model application is in quadrant I (aggressive support strategy). While the results of the alternative strategy analysis (QSPM) are the most priority, interesting and appropriate for the management and development of case studies of the Domestic Wastewater Management System (SPALD) of South Tangerang City, in this case referring to the results of participation through questionnaires and interviews with resource persons (stakeholders of the South Tangerang city government), obtaining the results of the analysis, namely the alternative Maintain Program strategy, namely developing and running simultaneously (Strategy Combination) between alternative strategies, with the order of Alternatives (1) Integrative Programs, amounting to 7.36, Alternative (3) Product Development, amounting to 7.19 and Alternatives (2) Market Penetration, amounting to 7.08.

Keywords: *Alternative Strategies, South Tangerang City, Participation, Banten Province, SWOT.*

INTRODUCTION

Multi-dimensional national development in management involves all government officials, both at the central and regional levels even at the lowest regional level, namely urban villages (Donaldson, 2017). The component or apparatus in question should have optimal abilities in carrying out its duties (Sumiarsih et al., 2018). The achievement targets have been stated in several programs including *Sustainable Development Goals* (SDGs) on the availability of access to sanitation, especially domestic wastewater treatment (CHAERUNNISSA, 2015). In the urban development program, the stages of work starting from the planning (Swyngedouw et al., 2002), development to management stages with quality standards of access services are not only feasible but safe and sustainable, especially according to the national 100-0-100 program, namely the achievement of 100 percent drinking water services, the achievement of the percentage of urban slums to 0 percent and the increase in population access to proper sanitation (domestic wastewater, waste and environmental drainage) to 100 percent at the level of basic needs, has also been prepared to help achieve the

RPJMN target. These programs include programs that have been prepared for development to the regions through district and city governments (Putra, 2016). In addition, the regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia number 29 of 2018 concerning SPM PUPR, one of which is related to the Minimum Service Standards for Domestic Wastewater Sub-Affairs, is implemented by the Regional Government to ensure the availability of access to domestic wastewater treatment for the community according to the administrative area.

So that with this research, effective solutions can be found out for urban planning activity programs to deal with these problems in accordance with the regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia number 04 of 2017 concerning the Implementation of Domestic Wastewater Management Systems, which is supported by pouring the planning activity program plan into regional planning documents, especially on the Regional Medium-Term Development Plan (RPJMD) and the System Master Plan Domestic Wastewater Management (RI-SPALD).

In addition, by identifying internal factors, namely the welfare and quality of human resources, facilities, and infrastructure supporting activity programs (Dauzar et al., 2021), availability of costs/capital/investment as well as service cash flow, legal policies, and regulations, organizational orientation and structure, cooperation programs, while identifying external factors, namely behavioral attitudes, encouragement of participation, knowledge, and awareness of respondents, environmental impacts and conditions, as well as potential implementation and sustainability program, where these factors can influence the development of activity programs so that appropriate and effective policy and strategy decisions are made in the South Tangerang City area, based on the level of community participation and *participation in the stakholde*r.

METHOD

The stages of this research include data collection, analysis of the validity and reliability of instruments, analysis of IFAS and EFAS, SWOT analysis and QSPM (Fatihawati & Handajani, 2022).

Figure 1. Research Flowchart

Data Collection

Taking questionnaire data on resource persons and community elements, the size of respondents using the *Slovin* Formula (Wulandari & Firdausy, 2020), with a *margin of error* of 10%, so that the number of respondents taken in the study was 100 respondents for community elements with the number of purpose in accordance with the amount of KK perkecamatan and 10 respondents of local government elements directly related to the duties and functions of their positions in providing direction and policy for water planning activity programs municipal domestic waste.

Meanwhile, the respondent selection technique uses *quota sampling* and questionnaire variable assessment using the *Likert Scale* for calculating the score of each question factor, both internal and external, as well as using the *Paired Comparison* method for alternative answer scores intended for internal elements as resource persons in providing rating assessments of each factor in influencing the planning activity program and also for provides an assessment score of alternative policies and strategies that will be planned later.

Before the questionnaire is distributed to elements of the community and speakers, the questionnaire must be tested first so that trust and reliability are known in each program of planning activities and question factors, namely by validating tests using the *Pearson Bivariate* Technique and reliability tests using *Cronbach's Alpha* Technique, in this study using application tools *Statistical Product and Service Solution* (SPSS) version 25.

IFAS and EFAS analysis

From the questionnaire data, the resource persons and the public elements obtained the weight value of each internal and external factor (Chen & Lee, 2020), which resulted from the

calculation of the number of scores compared to the number of respondents which was then multiplied by the magnitude of the ranking score for each factor variable, where this ranking score was obtained from collecting data with a questionnaire using the *Paired Comparison* method previously described.

The results of the identification analysis will be poured into the Internal Factor Evaluation (IFE) and External *Factor Evaluation* (EFE) matrices (Chande & Mayo, 2019), which then obtain alternative strategies scientifically by mapping the results of the analysis into the *External* Internal Matrix (IE) in order to obtain the position of the *Strategic Business Unit* (SBU) of the company/institution/organization and also mapping the results of the analysis into the position of the SWOT Quadrant (Zahra et al., 2021).

1. SWOT analysis (*Strengths*, *Weaknesses*, *Opportunities*, *Threats*) can help identify factors within the company/institution/organization S and W) and external factors (O and T). Where the total value of the S – W score → used as the coordinates of the X point and the total value of the O – T score → used as the coordinates of the point Y.
2. QSPM (*Quantitative Strategic Planning Matrix*) analysis is a technique that can objectively establish a prioritized alternative strategy. As a technique, QSPM requires *good intuitive judgment*.

RESULTS AND DISCUSSION

Analysis of Aspects of South Tangerang City Planning Activity Program

For data calculation analysis, it is obtained from several stages of calculation, namely the researcher summing the respondent's data per aspect according to the activity program and dividing it into external and internal indicators (Krisanthi et al., 2014), then the researcher conducts an analysis to get a commensurate comparison where the results of internal respondent data are obtained, namely 1 and external, namely 10 so that the initial comparison is 1: 10, then calculations are made so that the internal data and externally comparable/commensurate, the researcher equalized the comparison of the two factors, by multiplying the number of respondents of internal factors by 10 (1 x 10) and multiplying the number of respondents of external factors by 1 (1 x 100), and finally, the researcher conducted a final analysis for percentage weights on respondent data per each aspect according to the program of internal and external activities and indicators. Then based on the results of the calculation analysis, the following results were obtained:

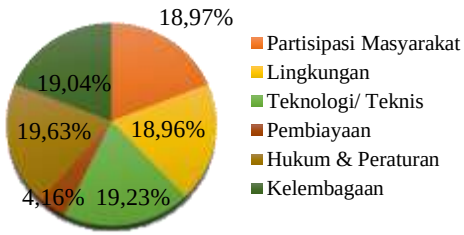

Figure 5. Comparison of Aspects of Program Implementation of SPALD Management & Development Planning Activities

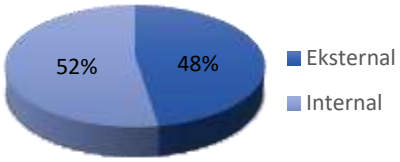

Figure 6. 1 Comparison of Indicators for the Implementation of SPALD Management & Development Planning Activities Program

IFE Matrix and EFE Matrix

IFE matrix analysis was obtained from a questionnaire filled out by respondents of the city government element, who have the capacity and thorough knowledge of the activity program, the respondent consists of 10 (ten) people as resource persons (Nunayon et al., 2021), in addition to that data collection related to ranking scores to the resource person element is also carried out.

While the EFE matrix analysis was obtained from a questionnaire filled out by respondents of urban community elements (UTAMI et al., 2022), who live/domiciled in the study area, which indirectly became the purpose of implementing the activity program, respondents consisted of 100 (one hundred) people.

Table 5. IFE Matrix Identification Analysis

No.	Information	Internal Key Factors	Weight	Rank	Weight X Rank
Strengths					
1.	Planning for the Construction of a Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City	a) Availability of Cost/ Capital/ Investment	0,066	4	0,264
		b) Related policies are set out in an urban planning document	0,067	5	0,335
2.	Construction Planning of Fecal Sludge Treatment Plant (IPLT) owned by the South Tangerang City Government	c) Organizational Orientation	0,064	3	0,192
		d) Facilities and Infrastructure of Fecal Sludge Treatment Plant (IPLT)	0,066	4	0,264
3.	Scheduled Fecal Sludge Service Management Planning (LLTT) by Tangsel City Government	e) Organizational Structure	0,066	4	0,264
		f) Facilities and Infrastructure supporting the activity program	0,057	5	0,285
4.	Planning for the Preparation of Regional Regulations on Domestic Wastewater	g) Legal policies and regulations are intended for all types of buildings, both new and existing.	0,057	5	0,285

No.	Information	Internal Key Factors	Weight	Rank	Weight X Rank
	Management and Service Levy by the South Tangerang City Government	h) Related legal regulations have been established in a city planning document	0,06	3	0,180
Sum			**0,50**		**2,07**
Weakness					
1.	Planning for the Construction of a Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City	a) Human Resources	0,058	4	0,232
		b) Facilities and Infrastructure supporting the activity program	0,063	2	0,126
2.	Construction Planning of Fecal Sludge Treatment Plant (IPLT) owned by the South Tangerang City Government	c) Availability of Cost/ Capital/ Investment	0,064	1	0,064
		d) Related policies are set out in an urban planning document	0,063	2	0,126
3.	Scheduled Fecal Sludge Service Management Planning (LLTT) by South Tangerang City Government	e) Cooperation program with parties outside South Tangerang City	0,063	3	0,189
		f) Related policies are set out in an urban planning document	0,063	2	0,126
4.	Planning for the Preparation of Regional Regulations on Domestic Wastewater Management and Service Levy by the South Tangerang City Government	g) Employee Welfare	0,061	2	0,122
		h) Service cash flow	0,060	1	0,060
Sum			**0,50**		**1,04**
TOTAL			**1**		**3,11**
SWOT quadrant: Axis (X) S – W = 1.02 →					

No.	Information	External Key Factors	Weight	Rank	Weight X Rank
Opportunities					
1.	Planning for the Construction of a Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black*	a) Respondents' Behavior	0,034	5	0,17
		b) Encourage Respondent Participation	0,032	3	0,096
		c) Respondents' Knowledge	0,034	5	0,17
		d) Potential Program Implementation	0,032	3	0,096

No.	Information	External Key Factors		Weight	Rank	Weight X Rank
	Water) South Tangerang City					
2.	Construction Planning of Fecal Sludge Treatment Plant (IPLT) owned by the South Tangerang City Government	e)	Respondents' Behavior	0,032	3	0,096
		f)	Respondent Awareness	0,033	4	0,132
		g)	Potential Program nplementation	0,032	3	0,096
		h)	Environmental Impact	0,033	4	0,132
3.	Scheduled Fecal Sludge Service Management Planning (LLTT) by South Tangerang City Government	i)	Program Continuity	0,031	3	0,093
		j)	Respondent Awareness	0,030	3	0,090
		k)	Environmental Conditions	0,030	3	0,090
		l)	Respondents' Behavior	0,028	5	0,140
4.	Planning for the Preparation of Regional Regulations on Domestic Wastewater Management and Service Levy by the South Tangerang City Government	m)	Program Continuity	0,031	4	0,124
		n)	Respondent Awareness	0,032	3	0,096
		o)	Environmental Impact	0,031	5	0,155
		p)	Environmental Conditions	0,029	4	0,116
Sum				**0,50**		**1,89**
Threats						
1.	Planning for the Construction of a Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City	a)	Respondent Awareness	0,031	2	0,062
		b)	Environmental Impact	0,031	2	0,062
		c)	Environmental Conditions	0,031	2	0,062
		d)	Program Continuity	0,031	2	0,062
2.	Construction Planning of Fecal Sludge Treatment Plant (IPLT) owned by the South Tangerang City Government	e)	Encourage Respondent articipation	0,032	1	0,032
		f)	Respondents' Knowledge	0,032	1	0,032
		g)	Program Continuity	0,032	1	0,032
		h)	Environmental Conditions	0,031	2	0,062
Threats						
3.	Scheduled Fecal Sludge Service	i)	Potential Program nplementation	0,031	2	0,062

No.	Information	External Key Factors	Weight	Rank	Weight X Rank
	Management Planning (LLTT) by South Tangerang City Government	j) Respondents' Knowledge	0,031	2	0,062
		k) Environmental Impact	0,031	2	0,062
		l) Encourage Respondent articipation	0,031	2	0,062
4	Planning for the Preparation of Regional Regulations on Domestic Wastewater Management and Service Levy by the South Tangerang City Government	m) Potential Program nplementation	0,031	2	0,062
		n) Respondents' Knowledge	0,031	2	0,062
		o) Encourage Respondent articipation	0,031	2	0,062
		p) Respondents' Behavior	0,031	2	0,062
Sum			**0,50**		**0,90**
Total			**1**		**2,79**
SWOT quadrant: Axis (Y) O – T = 0.99→					

Formulation of Strategic Alternatives Based on SWOT Quadrants

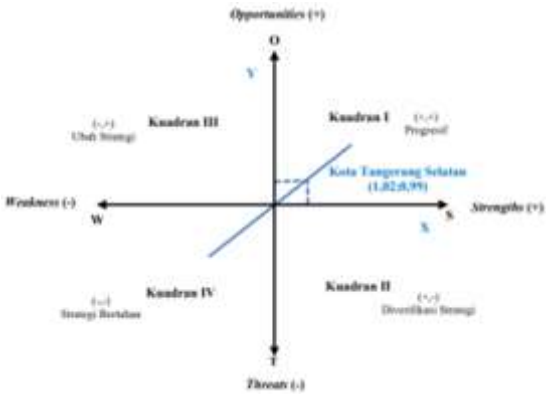

Figure 8. SWOT quadrant

The results of the analysis based on IFE and EFE made a SWOT quadrant which is the main strategy that can be seen in the figure above. The position of the model implementation is in quadrant I (Aggressive Support Strategy), and the application of the participation model is in prime and steady condition. Conditions that are very likely to continue to expand, enlarge growth and achieve maximum progress (Fithor et al., 2018).

Table 7. 1 SWOT Matrix Planning Activity Program for the Development of Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City

INTERNAL FACTORS / **EXTERNAL** FACTOR	***Strength* (S)** 1) Availability of cost/capital/investment 2) Related policies are set out in an urban planning document	***Weakness* (W)** 1) Human resources 2) Facilities and infrastructure supporting the activity program
***Opportunities* (O)** 1) Respondents' behavior attitudes 2) Encouragement of respondent participation 3) Respondents' knowledge 4) Potential program implementation	**SO Strategy:** 1) The availability of costs/capital / investment in activities will continue to increase in line with the support of attitudes, encouragement of participation, knowledge of respondents and the potential for program implementation in the community. (S1, O1, O2, O3, O4). 2) Related policies have been set out in a city planning document that is expected to be able to improve behavioral attitudes, encourage participation, knowledge of respondents and the potential implementation of programs in the community. (S2, O1, O2, O3, O4).	**WO Strategy:** 1) Human resources in the company/institution / organization in charge must be improved in order to be able to maintain and utilize behavioral attitudes, encouragement of participation, knowledge of respondents and the potential for program implementation in the community. (W1, O1, O2, O3, O4). 2) Sarpras supporting the activity program must be provided so that it is able to maintain high support from behavioral attitudes, encouragement of participation, knowledge of respondents and the potential for program implementation in the community. (W2, O1, O2, O3, O4).
Threats/ *Threats* (T) 1) Respondent awareness 2) Environmental impact 3) Environmental conditions 4) Program continuity	**ST Strategy:** 1) Seeing the availability of costs / capital / investment in activities is expected to increase respondents' awareness, environmental conditions and program sustainability and reduce the environmental impact of pollution in the community. (S1, T1, T2, T3, T4). 2) Related policies have been set out in a city planning document that is expected to be able to increase respondents' awareness, environmental conditions and program sustainability and reduce the environmental	**WT Strategy:** 1) Improving the human resources of the company / institution / organization in charge so as to be able to maintain and increase respondents' awareness, environmental impact, environmental conditions and the sustainability of the program in the community. (W1, T1, T2, T3, T4). 2) Sarpras supporting the program of activities that will be provided is expected to better change the level of awareness of respondents, reduce the environmental impact of pollution, environmental conditions and

	impact of pollution in the community. (S2, T1, T2, T3, T4).	the sustainability of the program in the community. (W1, T1, T2, T3, T4).

Table 8. SWOT Matrix of Fecal Sludge Treatment Plant (IPLT) Activity Program owned by the South Tangerang City Government

INTERNAL FACTORS / **EXTERNAL** FACTOR	***Strength* (S)** 1) Organization orientation 2) Facilities and infrastructure of Fecal Sludge Treatment Plant (IPLT)	***Weakness* (W)** 1) Availability of cost / capital / investment 2) Related policies are set out in an urban planning document
***Opportunities* (O)** 1) Respondents' behavior attitudes 2) Respondent awareness 3) Potential program implementation 4) Environmental impact	**SO Strategy :** 1) The orientation of the city government organization related to the activity program will continue to increase in line with the support of the respondents' attitudes and awareness, thereby reducing the environmental impact due to pollution and the potential for program implementation to run optimally in the community. (S1, O1, O2, O3, O4). 2) The facilities and infrastructure of the city Sludge Treatment Plant (IPLT) that will be built are expected to increase the attitude of behavior, awareness of respondents, potential for program implementation and reduce environmental impacts due to pollution and the potential for program implementation to run optimally in the community. (S2, O1, O2, O3, O4).	**WO Strategy :** 1) The availability of costs / capital / investment must be developed by utilizing the attitude of behavior, awareness of respondents, the potential for the implementation of san programs to reduce the environmental impact of pollution in the community. (W1, O1, O2, O3, O4). 2) Related policies must be supported in a city planning document so that it will be able to maintain behavioral attitudes, awareness of respondents, potential program implementation and protect the environment from the negative impacts of pollution. (W2, O1, O2, O3, O4).
Threats/ *Threats* (T) 1) Encouragement of respondent participation 2) Respondents' knowledge 3) Program continuity 4) Environmental conditions	**ST Strategy:** 1) Seeing the orientation of the company/institution/ organization to the person in charge will be able to increase the encouragement of participation, respondents' knowledge, program continuity and environmental conditions. (S1, T1, T2, T3, T4). 2) The facilities and infrastructure of the Fecal Sludge Treatment	**WT Strategy:** 1) Increasing the availability of costs / capital / investment is expected to be able to maintain and increase the encouragement of participation, respondent knowledge, program sustainability and environmental conditions. (W1, T1, T2, T3, T4).

	Plant (IPLT) are expected to be able to increase the encouragement of participation, respondents' knowledge, program sustainability and environmental conditions. (S2, T1, T2, T3, T4).	2)	Related policies are expected to have been established in a city planning document so as to better change the level of encouragement of participation, respondents' knowledge, program sustainability and environmental conditions. (W1, T1, T2, T3, T4).

Table 9. SWOT Matrix of Scheduled Fecal Sludge Service Management Planning Activity Program (LLTT) by South Tangerang City Government

INTERNAL FACTORS / **EXTERNAL** FACTOR	***Strength* (S)**	***Weakness* (W)**
	1) Organizational structure 2) Facilities and infrastructure supporting the activity program	1) Cooperation program with parties outside South Tangerang City 2) Related policies are set out in an urban planning document
***Opportunities* (O)** 1) Program continuity 2) Respondent awareness 3) Environmental conditions 4) Respondents' behavior attitudes	**SO Strategy :** 1) The organizational structure of the city government related to the activity program will continue to develop in line with the sustainability of the program, as well as increasing awareness and attitude of respondents, to improve environmental conditions in the community. (S1, O1, O2, O3, O4). 2) Facilities and infrastructure supporting the activity program are expected to be built soon in order to increase awareness and attitude of respondents' behavior, to maintain environmental conditions and the sustainability of the program in the community. (S2, O1, O2, O3, O4).	**WO Strategy :** 1) Cooperation programs with parties outside South Tangerang City must be developed by utilizing the awareness and attitude of respondents, to maintain environmental conditions and the sustainability of the program in the community. (W1, O1, O2, O3, O4). 2) Related policies must be supported in a city planning document so that it will be able to maintain the awareness and attitude of respondents' behavior, to maintain environmental conditions and the sustainability of the program in the community. (W2, O1, O2, O3, O4).
Threats/ *Threats* (T) 1) Potential program implementation 2) Respondents' knowledge	**ST Strategy :** 1) Looking at the structure of the company / institution / organization in the person in charge will be able to increase the potential for program implementation, knowledge and encouragement of respondent participation encouragement,	**WT Strategy :** 1) The cooperation program with parties outside South Tangerang City is expected to be able to potentially implement the program, knowledge and encourage respondents' participation to encourage participation,

3) Environmental impact 4) Encouragement of respondent participation	respondent knowledge, in order to protect against environmental impacts from pollution. (S1, T1, T2, T3, T4).	respondents' knowledge, in order to protect against environmental impacts from pollution. (W1, T1, T2, T3, T4).
	2) Facilities and infrastructure supporting the activity program are expected to be able to increase the potential for program implementation, knowledge and encouragement of respondents' participation in encouraging participation, respondents' knowledge, in order to protect against environmental impacts from pollution. (S2, T1, T2, T3, T4).	2) Related policies are expected to have been established in a city planning document so as to better change the level of potential program implementation, knowledge and encouragement of respondents' participation encouragement, respondents' knowledge, in order to protect against environmental impacts from pollution. (W1, T1, T2, T3, T4).

Table 10. SWOT Matrix of Regional Regulation Activity Program on Domestic Wastewater Management and Service Levy by South Tangerang City Government

INTERNAL FACTORS / **EXTERNAL** FACTOR	***Strength* (S)** 1) Legal policies and regulations are intended for all types of buildings, both new and existing. 2) Related legal regulations have been established in a city planning document	***Weakness* (W)** 1) Employee welfare 2) Service cash flow
***Opportunities* (O)** 1) Program continuity 2) Respondent awareness 3) Environmental impact 4) Environmental conditions	**SO Strategy :** 1) Legal policies and regulations intended for all types of buildings, both new and existing, must be applied in order to increase respondents' awareness, so as to be able to maintain the sustainability of the program, impacts and environmental conditions from pollution in the community. (S1, O1, O2, O3, O4). 2) Related legal regulations have been stipulated in a city planning document that will be implemented, which is expected to increase respondents' awareness, so as to be able to maintain the sustainability of the program, impacts and environmental conditions from pollution in the community. (S2, O1, O2, O3, O4).	**WO Strategy :** 1) The welfare of employees must be considered because it plays a very important role in maintaining the sustainability of the program and to ensure increased awareness of respondents, so as to be able to maintain the sustainability of the program, the impact and environmental conditions of pollution in the community. (W1, O1, O2, O3, O4). 2) The cash flow of municipal services needs to be maintained in quality so as to maintain the sustainability of the program and to ensure increased awareness of respondents, so as to be able to maintain the sustainability of the program, the impact and environmental conditions of pollution in the community. (W2, O1, O2, O3, O4).

Threats/ *Threats* (T)	**ST Strategy :**	**WT Strategy :**
1) Potential program implementation 2) Respondents' knowledge 3) Encouragement of respondent participation 4) Respondents' behavior attitudes	1) Legal policies and regulations intended for all types of buildings, both new and existing, must be implemented by increasing the knowledge, encouragement of participation and attitudes of respondents' behavior so as to maintain the sustainability of the potential implementation of the program in the community. (S1, T1, T2, T3, T4). 2) Related legal regulations have been stipulated in a city planning document, it is hoped that it will be able to increase the knowledge, encouragement of participation and attitudes of respondents so that the sustainability of the potential implementation of the program in the community is maintained. (S2, T1, T2, T3, T4).	1) Improving the welfare of employees is expected to be able to maintain and increase knowledge, encourage participation and attitudes of respondents, so that it will maintain the sustainability of the potential implementation of the program in the community. (W1, T1, T2, T3, T4). 2) The cash flow of municipal services needs to be maintained in quality so as to maintain the sustainability of the potential implementation of the program and to ensure increased awareness of respondents, so as to be able to maintain the sustainability of the program, knowledge, encourage participation and attitudes of respondents' behavior in the community. (W1, T1, T2, T3, T4).

Formulation of Strategic Alternatives Based on IE Matrix

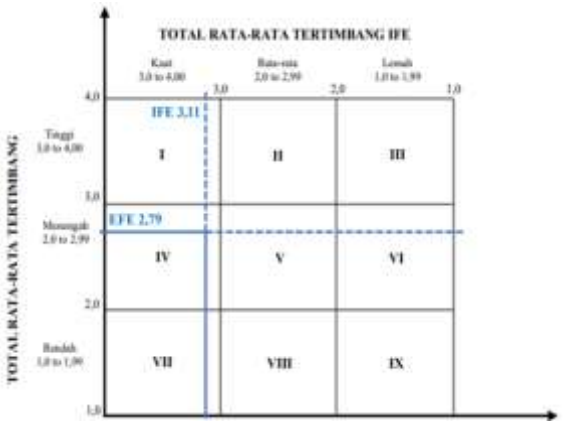

Figure 7. IE matrix

The IE matrix is used to determine the parameters used including the parameters of the internal strength of the company/institution/organization and the external influence of the elements of society faced. From the picture above, it can be seen that the position of the main Planning Activity Program of South Tangerang City is in quadrant IV of the IE matrix. Based on the IE matrix theory which states that the right strategy for quadrant positions I, II, and IV is a *grow and build* strategy. In the conditions mentioned above, the incentive strategy that can be carried out is a strategy (*Integrative Program*) to integrate both with government elements to community elements (backward integration, future integration and *horizontal integration*),

market penetration strategy (market *and product development*).) are two strategies that are widely carried out in this cell type (Nazwirman & Wulandari, 2016).

Table 11. Alternative Strategies

NO.	ALTERNATIVE	STRATEGY
1.	*Integrative Programs*	Integrating both with government elements to community elements (backward integration, future integration and *horizontal* integration), in carrying out the entire series of planning activity programs listed in the city planning document.
2.	*Market Penetration*	Market penetration by expanding or expanding the range of service programs of activities that have been planned and stated in the city planning document.
3.	*Product Development*	Development of activity programs that have been listed in the urban planning document by improving the quality, quantity and continuity of technological, regulatory, institutional and financial aspects.

Decision Making Stage Based on QSPM Matrix

Table 12. *Quantitative Matrix Strategic Planning Matrix* (QSPM)

No.	Program of Activities	Key Factors	Weight	Alternative 1		Alternative 2		Alternative 3	
				AXLE	BAG	AXLE	BAG	AXLE	BAG
1.	Planning for the Construction of a Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City	***Strengths***							
		a) Availability of Cost/ Capital/ Investment	0,066	4	0,277	4	0,251	4	0,271
		b) Related policies are set out in an urban planning document	0,067	4	0,295	4	0,261	4	0,255
		Weaknesses							
		a) Human Resources	0,058	3	0,186	4	0,215	4	0,209
		b) Facilities and Infrastructure supporting the activity program	0,063	4	0,221	3	0,208	4	0,227
		Opportunities							
		a) Respondents' Behavior	0,034	4	0,126	4	0,126	4	0,122
		b) Encourage Respondent Participation	0,032	3	0,109	4	0,112	4	0,115

No.	Program of Activities	Key Factors	Weight	Alternative 1		Alternative 2		Alternative 3	
				AXLE	BAG	AXLE	BAG	AXLE	BAG
		c) Respondents' Knowledge	0,034	3	0,116	3	0,112	3	0,116
		d) Potential Program Implementation	0,032	4	0,118	4	0,118	3	0,109
		Threats							
		a) Respondent Awareness	0,031	4	0,115	4	0,112	4	0,109
		b) Environmental Impact	0,031	3	0,102	3	0,105	4	0,121
		c) Environmental Conditions	0,031	3	0,105	4	0,109	4	0,115
		d) Program Continuity	0,031	4	0,118	4	0,109	4	0,118
Sum					**1,89**		**1,84**		**1,88**
2.	Construction Planning of Fecal Sludge Treatment Plant (IPLT) owned by the South Tangerang City Government	***Strengths***							
		a) Organizational Orientation	0,064	4	0,275	4	0,224	4	0,243
		b) Facilities and Infrastructure of Fecal Sludge Treatment Plant (IPLT)	0,066	4	0,271	3	0,224	3	0,224
		Weaknesses							
		a) Availability of Cost/ Capital/ Investment	0,064	4	0,230	4	0,230	4	0,230
		b) Related policies are set out in an urban planning document	0,063	4	0,239	4	0,246	4	0,239
		Opportunities							
		a) Respondents' Behavior	0,032	4	0,115	3	0,099	3	0,099
		b) Respondent Awareness	0,033	4	0,116	3	0,102	3	0,102
		c) Potential Program Implementation	0,032	4	0,122	3	0,109	3	0,106
		d) Environmental Impact	0,033	4	0,116	3	0,106	3	0,109
		Threats							
		a) Encourage Respondent Participation	0,032	3	0,096	3	0,102	3	0,106

No.	Program of Activities	Key Factors	Weight	Alternative 1		Alternative 2		Alternative 3	
				AXLE	BAG	AXLE	BAG	AXLE	BAG
		b) Respondents' Knowledge	0,032	3	0,099	3	0,106	3	0,099
		c) Program Continuity	0,032	3	0,109	3	0,106	3	0,102
		d) Environmental Conditions	0,031	3	0,099	3	0,105	3	0,105
Sum					**1,89**		**1,76**		**1,77**
3.	Scheduled Fecal Sludge Service Management Planning (LLTT) by South Tangerang City Government	***Strengths***							
		a) Organizational Structure	0,066	4	0,257	4	0,231	4	0,244
		b) Facilities and Infrastructure supporting the activity program	0,057	3	0,194	4	0,205	4	0,205
		Weaknesses							
		a) Cooperation program with parties outside South Tangerang City	0,063	4	0,265	4	0,239	4	0,227
		b) Related policies are set out in an urban planning document	0,063	4	0,246	4	0,239	4	0,233
		Opportunities							
		a) Program Continuity	0,031	4	0,118	4	0,109	4	0,121
		b) Respondent Awareness	0,030	3	0,102	4	0,105	3	0,096
		c) Environmental Conditions	0,030	4	0,114	4	0,114	4	0,105
		d) Respondents' Behavior	0,028	3	0,095	4	0,101	4	0,098
		Threats							
		a) Potential Program Implementation	0,031	4	0,124	4	0,121	4	0,115
		b) Respondents' Knowledge	0,031	3	0,105	4	0,112	4	0,109
		c) Environmental Impact	0,031	4	0,115	4	0,118	4	0,115
		d) Resopnden Participation Push	0,031	3	0,105	4	0,112	3	0,102
Sum					**1,84**		**1,81**		**1,77**
4.		***Strengths***							

No.	Program of Activities	Key Factors	Weight	Alternative 1		Alternative 2		Alternative 3	
				AXLE	BAG	AXLE	BAG	AXLE	BAG
	Planning for the Preparation of Regional Regulations on Domestic Wastewater Management and Service Levy by the South Tangerang City Government	a) Legal policies and regulations are intended for all types of buildings, both new and existing.	0,057	4	0,200	4	0,205	4	0,217
		b) Related legal regulations have been established in a city planning document	0,060	4	0,216	3	0,192	4	0,222
		Weaknesses							
		a) Employee Welfare	0,061	4	0,238	4	0,214	4	0,226
		b) Service cash flow	0,060	4	0,258	4	0,228	4	0,246
		Opportunities							
		a) Program Continuity	0,031	4	0,109	3	0,105	4	0,109
		b) Respondent Awareness	0,032	3	0,106	3	0,106	3	0,106
		c) Environmental Impact	0,031	4	0,112	4	0,115	4	0,115
		d) Environmental Conditions	0,029	3	0,096	3	0,096	4	0,104
		Threats							
		a) Potential Program Implementation	0,031	4	0,118	4	0,112	4	0,115
		b) Respondents' Knowledge	0,031	3	0,090	3	0,102	3	0,099
		c) Encourage Respondent Participation	0,031	3	0,099	3	0,105	4	0,109
		d) Respondents' Behavior	0,031	3	0,105	3	0,099	3	0,102
Sum					**1,75**		**1,68**		**1,77**
TOTAL					**7,36**		**7,08**		**7,19**

Information:

AS= *Alternative Score*

TAS= *Total Alternative Score*

CONCLUSION

Several major planning activity programs were obtained, based on literature studies and interviews with city government *stakeholders* in improving the management and development of domestic wastewater systems in South Tangerang City, including Planning for the

Development of Domestic Wastewater (*Grey* Water) & Fecal Management Systems (*Black Water*), Planning for the Construction of a Fecal Sludge Treatment Plant (IPLT) owned by the South Tangerang City Government, Planning for the Management of Scheduled Fecal Sludge Services (LLTT) by the South Tangerang City Government and Planning for the Preparation of Regional Regulations (Perda) on Domestic Wastewater Management and Service Levy by the South Tangerang City Government.

The results of the evaluation of the respondents also stated that the level of participation/participation was highest in internal indicators at 52.45%, while external indicators were 47.55%. Meanwhile, the variables that have been identified based on the participation/participation *of* city government stakeholders and the community in the management and development of the SPALD case study of South Tangerang City obtained the following results:

a. Internal Factors

- Program of Planning for the Development of Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City:
- *Strength*: The availability of costs/ capital/ investment and related policies have been set out in an urban planning document.
- *Weakness*: Human resources and facilities and infrastructure supporting the activity program.
- The activity program of the Fecal Sludge Treatment Plant (IPLT) Activity Program owned by the South Tangerang City Government:
- *Strength*: Organizational orientation and facilities and infrastructure of Fecal Sludge Treatment Plant (IPLT).
- *Weakness*: The availability of costs/capital/investments and related policies have been set out in a city planning document.
- Scheduled Fecal Sludge Service Management Planning (LLTT) activity program by South Tangerang City Government:
- *Strength*: Organizational structure and facilities and infrastructure supporting the activity program.
- *Weakness*: Cooperation programs with parties outside South Tangerang City and related policies have been set out in a city planning document.
- The program of activities of the Regional Regulation on Domestic Wastewater Management and Service Levy by the South Tangerang City Government:
- *Strength*: Legal policies and regulations are intended for all types of buildings, both new and existing, and related legal regulations have been stipulated in a city planning document.
- *Weakness*: Employee welfare and service cash flow.

b. External Factors

- Program of Planning for the Development of Domestic Wastewater Management System (*Grey* Water) & Fecal Sludge (*Black Water*) South Tangerang City:
- *Opportunity*: Attitude of respondent behavior, Encouragement of respondent participation, Knowledge of respondents and Potential of program implementation.

- *Threats*: Respondents' awareness, Environmental impact, Environmental conditions and Program sustainability.

➢ The activity program of the Fecal Sludge Treatment Plant (IPLT) Activity Program owned by the South Tangerang City Government:

- *Opportunity*: Attitude of respondents, Awareness of respondents, Potential implementation of programs and Environmental impact.
- *Threats*: Encouragement of respondent participation, Knowledge of respondents, Program continuity and Environmental conditions.

➢ Scheduled Fecal Sludge Service Management Planning (LLTT) activity program by South Tangerang City Government:

- *Opportunity*: Program continuity, respondent awareness, environmental conditions and respondents' behavior attitudes.
- *Threats*: Potential program implementation, Respondent knowledge, Environmental impact and Encouragement of respondent participation.

➢ The program of activities of the Regional Regulation on Domestic Wastewater Management and Service Levy by the South Tangerang City Government:

- *Opportunity*: Program continuity, Respondent awareness, Environmental impact and Environmental conditions.
- *Threats*: Potential program implementation, Respondent knowledge, Encouragement of respondent participation and Attitude of respondent behavior.

Based on the QSPM Matrix analysis, the most priority, interesting and appropriate Alternative Strategies were obtained for the management and development of the Domestic Wastewater Management System (SPALD) case study of South Tangerang City, in this case referring to the results of participation through questionnaires and interviews with resource persons (*stakeholders* of the South Tangerang city government), with alternative strategies *Maintain Program* , i.e. developing and executing the highest level of strategy as the top priority, to the lowest for the alternative order of strategy and elaboration is Alternative (1) *Integrative Program*, amounting to 7.36; Alternatives (3) *Product Development*, amounting to 7.19; and Alternative (2) *Market Penetration*, amounting to 7.08.

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