

Establishing Waste Management System Strategy by Using Competitive Positioning Analysis

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Abstract—Waste bank is an organization developed by the community to help people manage and recycle waste. Waste banks are considered as a solution to the problem of garbage in urban areas. The effort that is being carried out to accelerate the movement of waste banks is the use of information technology. Smash is a pioneer in online-based waste management systems. Besides Smash, other similar applications have now emerged and have an impact on the number of Smash users in the future. In order for Smash to survive in competition, a research was conducted to design a competitive strategy for online-based waste bank management application by using competitive positioning analysis method. Based on the results of market identification, products, existing strategies, analysis on 5 market pressures, and SWOT analysis, it was concluded that Smash occupies a position as a market leader with a fairly good market dominance. In terms of products, Smash is a management system with a very good level of readiness compared to other competitors. In order to be able to compete, Smash therefore needs to develop a strategy to increase Smash users and the traction usage of Smash applications.

Keywords—Waste Bank Strategy, Competitive Positioning Analysis, Smash

I. INTRODUCTION

The rapid development of technology has changed the map of world business competition. The use of digital technology has now penetrated into various industrial sectors both commercial and non-commercial industries. One of the digital technology development forms that is being used is web-based online application. In non-commercial industries, the use of web-based online applications is very helpful in running the company's daily operational activities. In addition, the use of web-based online applications also helps companies to remain efficient in carrying out daily operational activities. In non-commercial industries, web-based online applications have been widely used for waste management activities in the community, especially in the Waste Bank. Garbage is a serious problem that is being faced in developing countries, especially in urban areas. The estimated amount of world waste currently is 1.3 billion tons per year and will increase by 2.2 billion tons per year by 2025 [1]. The waste bank is considered as the right solution to solve the problem of waste mismanagement faced by local governments in developing countries [2]. The growth of the number of Waste Banks and the number of waste bank customers in Indonesia in the last five years can be seen in Figures 1 and 2.

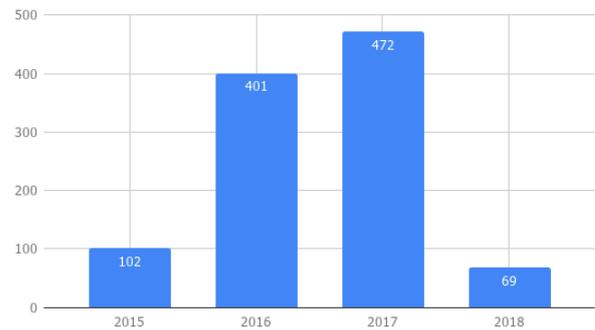


Fig 1. Growth of waste banks from 2015 to 2018

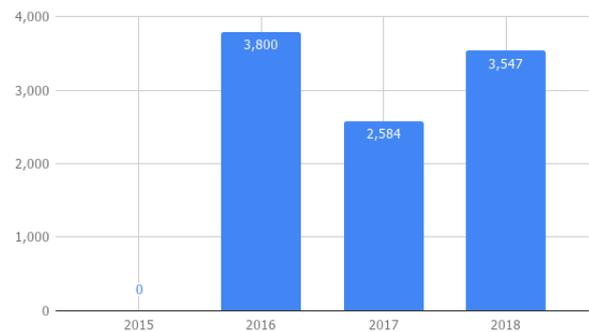


Fig 2. Growth of waste bank customers from 2015 to 2018

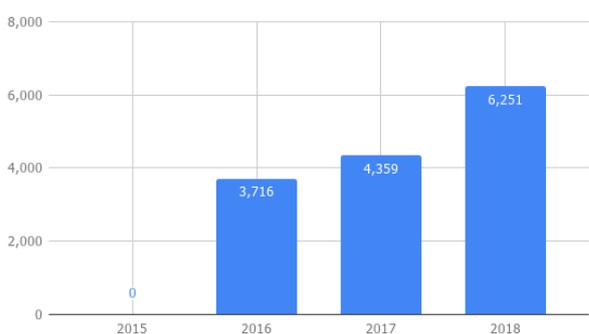


Fig 3. Growth of waste bank transaction from 2015 to 2018

Based on the growth data of the number on Waste Banks in Figure 1, it is known that there was an increase in the number of waste banks from 2015 to 2017. In August 2018, there was a decrease in the number of waste banks due to the government policy to verify data when establishing a garbage

bank. The policy was implemented to facilitate the data collection process of waste banks that are currently growing very rapidly. The data in Figure 2 shows that the growth on the number of waste bank customers increases significantly every year while the data in Figure 3 shows that the number of waste bank transactions increases every year. The data in Figure 2 and 3 is data compiled by Smash. This makes the waste industry attractive for further development. Waste bank is a community-based waste management system that allows people to actively manage waste in their environment [3]. The existence of a waste bank provides economic benefits to the surrounding community such as creating jobs, additional sources of income while the city government can reduce the costs of handling and disposal of waste for the local area [4]. Furthermore, in Indonesia the government has appealed to use an information technology approach in solving waste problems in Indonesia. The central government is responsible for providing technical assistance, integrating waste banks with Extended Producer Responsibility (EPR), monitoring and evaluating the operations of waste banks in Indonesia [2]. These activities can be facilitated by using information technology solutions, one of which is the use of online-based waste management applications. The use of online-based waste management applications is used as an innovative approach to increase the acceptance of waste bank solutions as well as to facilitate the operational activities of the Waste Bank [3]. The issue of waste management has now become an increasingly important issue to be resolved from a global perspective [1]. In addition, Takiguchi [1] found that countries in Asia were the recipients of the largest funding assistance provided by the Global Environment Facility (GEF). One focus of assistance provided by GEF is technology solution. Therefore, it can be concluded that the potential or opportunity for the use of online-based waste management applications in the waste industry is huge both from the product aspect (application development) and from the market aspect (application users, namely managers and customers of waste bank).

In Indonesia, there have been several online-based waste bank management applications including Smash, E-Bank Garbage, Gringgo, SiBas, Si Abah, Garbage Wallet, and others. The application has a function or feature that is nearly the same, which is replacing the waste management system such as picking up trash, depositing trash, withdrawing balances, and selling garbage processed offline into online. The things that distinguish the application include the appearance, reliability of the online system, and the scope of the pick-up service. Furthermore, the timing factor of application launching also affects application acceptance. Smash is a pioneer in online-based waste management systems. The emergence of other online-based management system applications will have an impact on the number of Smash users in the future due to the tendency of users to move or the potential users that have not been penetrated properly by Smash. Therefore, research was conducted to design a competitive strategy for online-based waste bank management applications based on the results of competitive positioning analysis.

II. RESEARCH METHODOLOGY

A. Data Collection

This research is a descriptive qualitative research which aims to provide a comprehensive summary or understanding of a phenomenon. However, this method is less interpretive than other qualitative approaches [5]. The data used in this study are data obtained from the literature study, field observation, and interviews of key respondents who are Smash owner, director of Bank Sampah Induk Gemah Ripah, director of Bank Sampah Induk Bersinar, main waste bank manager (8 respondents), waste bank customer (30 respondents).

B. Data Processing and Analysis

In this study strategy development was carried out by using competitive positioning analysis methods developed by Fleisher and Bensoussan [6]. Competitive positioning analysis is used to determine Smash's position in the competitive map of online-based waste management system applications. Fleisher and Bensoussan [6] explained that there are three stages of competitive positioning analysis, including:

- 1) Identify Current Strategy and Market or Product or Project Parameter. At this stage, Smash identified the business and marketing strategies as preliminary data to provide a descriptive description of the existing position of Smash. This study used 7P marketing mix analysis (Product, Price, Place, Promotion, People, Process, Physical Evidence) and STP (Segmenting, Targeting, Positioning) analysis to identify strategies, markets, and products of Smash.

- 2) Conduct Analysis. After getting an overview of the strategies, markets, and products that become the focus of Smash, the next step was to analyze the competition environment of waste industry, especially online-based waste management applications by using Porter's five forces analysis. Porter's five forces analysis is a model used to analyze the level of competition in an industry, a cluster, and a basis for consideration in conducting business strategy development [7]. Understanding of the pressures that shape the industrial competition environment is the first step for strategy development [7]. Dalken [8] in his research found that the five competitive forces are still applicable, and it is not necessary to add additional forces to the porter model. Furthermore, market research was also conducted at this stage to gain an in-depth understanding of the competition environment by observing existing data, literature studies, and interviews with key respondents, namely waste bank owner, waste bank manager, and waste bank customers.

- 3) Derive insights from the preceding analysis and formulate a positioning strategy. Strategy development was performed by using SWOT Analysis. Fleisher and Bensoussan [6] stated that SWOT Analysis is one of the tools that can be used to develop strategies. In addition, Bonn and Furlough [9] stated that SWOT analysis is a tool that can help companies to formulate messages to be delivered to customers. By understanding the strengths and weaknesses of the company as well as the opportunities and threats faced by the company, the company can position itself well in the marketplace [9].

III. RESULTS AND DISCUSSION

A. Product, Market, & Strategy Identification

1) Product. At present, most of the Waste Banks are still carrying out operational activities traditionally. In carrying out financial management in recording garbage deposited by residents, the Waste Bank in several regions recorded by using savings books and submitted them to the residents [10]. Meanwhile, each year the number of customers increases significantly. In four years, waste bank in Surabaya developed into 180 branches in 31 local districts and had more than 10,000 accounts [3]. There are 1,774 people from 9 Waste Banks [11] in Denpasar City. With the number of customers who have reached thousands of people and conduct operational transactions on a daily basis, an online-based waste information system was needed to facilitate the operational process and ensure the delivery speed of accurate information to the Waste Bank customers. Smash is an integrated app for trash management in Indonesia described by these three stages. The first is connecting all available waste banks in Indonesia. The second is increasing urban participation with mySmash, an app connecting people to Waste Bank near them. The uniqueness of mySmash is features for locating nearest Waste Bank, Waste Pickup Services, Online Store for Waste Craft and Smash-Pay, and e-money converted from trash deposit. With Smash-Pay, people could buy airtime bills, pay for electricity, donate, etc. The last stage is collaborating with local governments as Smart City modules for waste management called e-Smash.

1) Price. The price applied to Smash users consists of two price components, namely the use of Smash-Pay and e-Smash subscription fees. Smash-Pay is a feature that functions to bridge the conversion of waste into electronic money. Smash-Pay has been recognized by Bank Indonesia and the Financial Services Authority as a regulator of the use of electronic money in Indonesia. By using Smash-Pay, application users can use it to purchase credit, bill payments (electricity, telephone, water), insurance, and donation payments. The costs applied for the use of Smash-Pay vary for each transaction, but on average the cost per transaction is 1.81% while the e-Smash subscription fee is in the form of annual subscription fees which will be charged to the regional government budget.

2) Place. To facilitate access on products to the Waste Bank, Smash provides web-based and mobile-based applications. Web-based applications can be accessed online through the internet at www.BankSampah.id. The main features that can be used in web-based applications are:

- Customer Management
- Category and Waste Management
- Waste Pickup Management
- Waste Transaction Statistics
- Dashboard and Report

Furthermore, web-based applications have an advantage in providing data processing in a better form. Smash also provides a mobile-based application that has all the features that can be run in a web-based application, which is accompanied by additional advantages to operate in offline mode, namely a function that allows applications to still be used if internet connectivity is not available.

3) Promotion. The promotional strategies applied to Smash applications are Joint Digital Marketing, Content Marketing, and Waste Education. Joint Digital Marketing is a form of marketing cooperation with electronic money providers. This form of cooperation enables massive marketing processes and is applicable to promotional schemes.

In addition, this activity is also done through the Trash Bank with an affiliate system that will give credit to the Trash Bank over every new Trash Bank successfully invited to join using mySmash. Content Marketing is an activity of creating a good and engaging content in the form of videos, memes, or infographics, that is an effective marketing method because the content created can be viral on social media. The content created must have new engagement or participation elements. Trash Education activity is consisting of the learning or knowledge extraction process from the trash initiators at the Trash Bank, which can generate information that can attract community to participate. Besides that, learning or knowledge extraction process will give best practice effort based on daily activities of Trash Bank.

4) People. Along with current stage right now, our team expertise is very suitable in responding user feedback. Our team is a talented skill of people, with high awareness and interest in environmental issues.

- Putra Fajar Alam | Chief Executive Officer | Master Degree | 5 years' experience & interaction with Trash Bank.
- Addin Gama Bertaqwa | Chief Technology Officer | Master Degree | 7 years' experience in IT Solution. Ex Geeknesia, Mitrais.
- Sari Wulandari | Chief Marketing Officer | Master Degree | 4 years' experience of marketing area.
- Alfian Hidayat | Chief Mobile Officer | Bachelor Degree | 2 years' experience in mobile application development. Android Developer Certified.
- Ari Apridana | Chief Security Officer | Bachelor Degree | 3 years' experience in IT Security. Offensive Security Certification Professional Certified.

5) Process. In order to manage their operational activity of marketing communication, Smash create Smash Marketing Apps that consist of marketing activity, such as follow up newly registered Trash Bank, upgrade subscription status, etc. This process also generate some innovations to speed up and simplify activities, such as :

- Offline Workshop
Supported by Ministry Research & Technology of Republik Indonesia, right now we create a workshop in 10 provinces. We are also collaborating with local entity like local government, activist, etc.
- Create Bot on Telegram & Line
To simplify our CRM process, we were using bot on Telegram & Line Apps. With default question like Frequently Asked Questions, our marketing team could improve their service time easily.
- Create Salesforce Apps
Based on our marketing activity that separated daily, we need a tool to update and integrate marketing

process. We solved that problem with our customized salesforce apps “Smash Marketing”. An Android based apps that allows the marketing team to update marketing status in real-time.



Fig 4. Dashboard Smash Marketing Apps

6) Physical Evidence. Smash as software is Software as a Service (SaaS) which is a software distribution model in which applications are hosted by vendors or service providers and made available to customers via the internet network. To use Smash facilities and features, users need to register online first. Because customers use Smash through internet network, then this is very closely related to the server capacity used. The current server capacity has been described previously. Here is a server usage with 5,500+ users, or an average of 500+ active users per day:

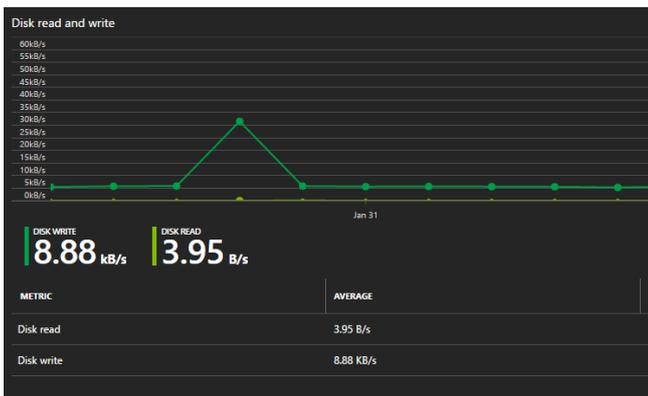


Fig 5. Disk Utilization



Fig 6. Memory & Processor Utilization

By looking at the statistical data above, where the average use of new servers reaches 20%, then using the same server specifications it can still accommodate up to 25.000 users. If required the server capacity can be increased by making server type adjustments that can be done anytime, with downtime of about 10 minutes.



Fig 7. Visitor Statistic

Country	Acquisition			Behavior
	Sessions	% New Sessions	New Users	Bounce Rate
	1,472 % of Total: 100.00% (1,472)	59.38% Avg for View: 59.24% (0.23%)	874 % of Total: 100.23% (872)	15.35% Avg for View: 15.35% (0.00%)
1. Indonesia	1,417 (96.26%)	59.35%	841 (96.22%)	14.61%
2. United States	22 (1.49%)	90.91%	20 (2.29%)	54.55%
3. (not set)	15 (1.02%)	20.00%	3 (0.34%)	33.33%
4. Singapore	7 (0.48%)	42.86%	3 (0.34%)	14.29%
5. Netherlands	4 (0.27%)	50.00%	2 (0.23%)	0.00%
6. France	2 (0.14%)	100.00%	2 (0.23%)	0.00%
7. United Kingdom	2 (0.14%)	50.00%	1 (0.11%)	0.00%
8. Japan	2 (0.14%)	100.00%	2 (0.23%)	50.00%
9. Germany	1 (0.07%)	0.00%	0 (0.00%)	0.00%

Fig 8. Geo-statistical Users

In addition to server-related capacity, the development plan is performed for the addition of features on a regular basis according to feedback from mySmash users. mySmash has several plans to add some new features relevant to the needs of Trash Bank, including:

1. Integration with trash industry

This feature is expected to be able to bridge the issue of garbage prices as well as trash distribution that has been managed by Trash Bank.

2. Integration with local government

By integrating the solid trash system with the local government, it is hoped that there will be a synergy between the government program and budget with the initiatives in the trash management sector.

3. UI / UX Improvement

Improved User Interface (UI) and User Experience (UX) is one of the important things in the field of application that aims to improve the user experience that has been registered and increase conversions.

B. Segmenting, Targeting, Positioning Analysis

1) **Segmenting.** The following are internet penetration data in Indonesia in 2016. Data from APJII shows that internet penetration in Indonesia is 51.8% (132.7 million) with 52.5% of male users and 47.5% of female users. The data in Figure 9 also shows that the population lives in urban areas based on 65% of people living on the island of Java, the most populous island in Indonesia.



Fig 9. Indonesia Internet Penetration on 2016

Additional data from APJII also shows that most internet users are between the ages of 10 and 44 years old. Assuming that people between the ages of 18 and 24 are the easiest and most open-minded to receive information from this initiative, we target 50% of this segment and older age to be more difficult to accept.

Based on the data from the Ministry of Environment and Forestry (MEF), in 2012 there were 84,623 Waste Bank customers throughout Indonesia. In the next 3 years, this number grew to 175,413 or around 207%. Using the extrapolation method, in 2021 it is estimated that there will be more than 350 thousand people involved in the issue of waste sorting.

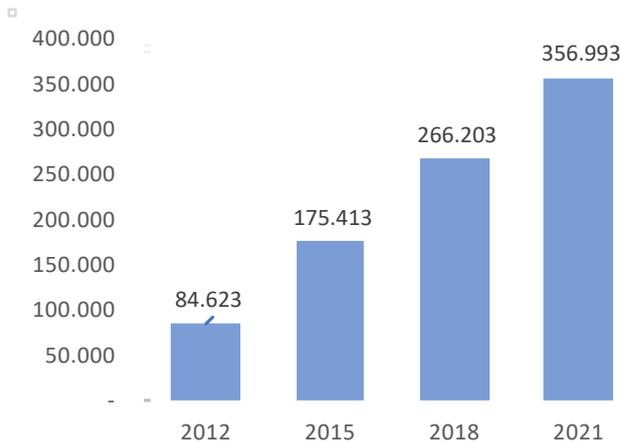


Fig 10. Waste Bank Customers

2) **Targeting.** By referring to the data above, Smash was intended for market segments with profiles as follows:

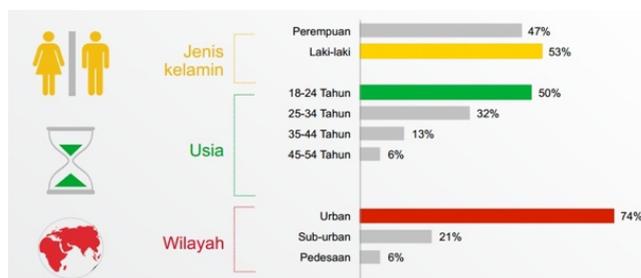


Fig 11. Market segmentation

Our team has conducted in-depth interviews where the results can be accessed through this link. The conclusion of the interview is that people want to participate in the Waste Sorting Group if there is an easy way to do it. Based on data from our integrated waste management platform, Smash, there are 10,498 customers from 1,107 registered Waste Banks from 32 Provinces in Indonesia.



Fig 12. Smash Dashboard in August 2018

3) **Positioning.** Smash's market share consists of three groups, namely Waste Bank, Government, and Society. An overview of the number of market shares is presented in the following visualization:



Fig 13. Smash Market Share

Smash applications target market share from:

1. Waste Bank

Based on MEF data in May 2018, the active Waste Banks throughout Indonesia were about 5,244. Currently there are 1,107 (~20%) Waste Banks incorporated in Smash from 32 Provinces throughout Indonesia.

2. Community

Considering the level of public awareness to be involved in sorting waste is not great enough, Smash is targeting the number of 100,000 people who are routinely involved in the process of sorting waste through the Waste Bank. This is based on data from MEF in May 2018 that the number of Waste Bank customers throughout Indonesia is currently about 174,904 customers.

3. Government

By looking at the potential use of e-Smash as part of Smart City, there is a market share for local governments throughout Indonesia, with a total of 548 consisting of 34 Provincial Governments, 98 City Governments, and 416 District Governments.

C. Industry Analysis (Porter Five Force's Model)

1) Competitive Rivalry. Based on the data compiled by Smash's internal team, there are currently 21 application competitors in the waste sector. Some of them are E-Bank Sampah, Gringgo, SiBas, Si Abah, Dompot Sampah, etc. These competitors are generally an application solution for the waste sector but have a different focus. Based on the results of the analysis of competitor data, it can be concluded as follows:

- a. Based on the availability of the platform, 66.67% (14 applications) are mobile-based applications while Smash is a web & mobile-based application that has advantages in terms of the availability of application platforms.
- b. In terms of functionality, 42.86% (9) are a special application of Waste Bank, and 33.33% (7) are a special application for waste transport services, and 1 application that has a Fintech function. Smash has a differentiation in the form of applications for Waste Banks that can service waste pick up and that are supported by the Fintech function, or it can be concluded that the application has the most complete functionality of other competitors.
- c. In terms of legality, only 47.62% (10) have legality in the form of PT or CV. Smash is one of them, which is under PT. Indonesian Green Solution.
- d. Based on the scope or coverage of the application availability area, 57.14% (12) are City/ District level applications, 23.81% (5) are Provincial applications, and

only 19.05% (4) operate nationally. Smash position is among applications that operate nationally.

Some competitors have more advantages than Smash, including:

- a. Attractive design
- b. Supported by local government
- c. Integrated with local public transportation
- d. It has been operating commercially and is supported by the CSR program of one of the SOEs.

2) Threat of New Entry. To be able to make similar applications, new entrants must have technical and non-technical skills. Technical capability is the ability to develop applications that are in accordance with the needs and analysis of business processes and existing processes. In addition, technical resources that support such as adequate server capacity are also needed. Non-technical skills needed are the ability to coordinate with various stakeholders related to waste sorting, namely the community, government, and academics as supporting elements. It also requires a highly dedicated team that is ready to allocate their fulltime in order to enter the area of the waste processing industry, especially from the realm of application. In terms of regulation, the government has also issued regulations concerning waste management in Indonesia. To protect against the threat of new arrivals, currently Smash has protected the Intellectual Property Rights (IPR) in the form of Copyright and Trademarks that have been recognized by the Directorate General of Intellectual Property of the Ministry of Law and Human Rights of the Republic of Indonesia.

3) Threat of Substitution. The replacement products for online-based applications are in the form of manual or conventional processes that are currently being carried out in many Waste Banks. The process is in the form of manual registration activities where the customer must physically visit the Waste Bank, deposit the waste and take the balance manually. This process is a substitution of the digitization process presented by online-based applications. This can be a threat if online-based applications made specifically by Smash are not able to meet what is needed by its users.

4) Supplier Power. Currently Smash has established partnerships with several parties as suppliers, including:

- a. Partnership with T-Money as a provider of online payment systems.

The partnership with T-Money as the provider of online payment systems has been running since 2016. This process was carried out based on an agreement on the sharing of the business model carried, namely the use of Smash-Pay. Currently there are many options for online payment systems, even those that are directly connected to conventional banking systems. As a precaution, Smash also seeks to establish cooperation with several online payment system providers, both from banks and telecommunications providers.

- b. Partnership with Microsoft Azure as the server provider

Smash is currently using a server infrastructure from Microsoft Azure. Server infrastructure services from Microsoft Azure are chosen because of competitive prices and flexible schemes for the type of server needed. Nonetheless as another option, there are currently many

server providers available, including Google Cloud Platform, Amazon Web Services, Digital Ocean, etc. As a precaution if something happens with the infrastructure provided by Microsoft Azure, Smash has prepared an easy scheme to migrate the system to other servers and automate the data backup process periodically.

5) Buyer Power. By using estimates based on Segmenting, Targeting, Positioning (STP) stages, prospective buyers from the use of Smash applications amount to 100,000 customers and 548 local governments. To change people's habits from the use of cash transactions to non-cash transactions, it certainly requires expensive fees, and the use of costs will focus on the marketing and socialization process, but this needs to be a major concern because customers are the biggest potential buyers of the services provided by the Smash application. At the same time, from the government side as a potential buyer of e-Smash service, marketing activities are easier to do because of the need of the local government to implement the Smart City concept or e-Government supported by the central government. This can be an advantage of Smash which carries the concept of integrated waste management applications.

D. SWOT Analysis

According to research conducted by Malinauskite et al [12], waste management needs to pay attention to factors that influence such as Political, Economic, Environmental, Social, Technological, and Educational Advances. In the SWOT Analysis, these factors are also taken into consideration and explained as follows:

1) Strength. The strength point of Smash is becoming National Trash Management Application. With a nationally integrated application concept and can connect various stakeholders in waste issues, Smash could be the platform for various trash management efforts in Indonesia. The process of digitizing Trash Bank conducted in Smash, refers to the concept of internet banking application in conventional banking in Indonesia. By adjusting to existing business processes within the Trash Bank, this process will help facilitate the operational management of Trash Bank operations throughout Indonesia. In addition, other optimization processes are also done such as paperless, cashless, and various other latest technologies. Smash also facilitates customers and the community through a mobile app mySmash. mySmash is expected to increase the active participation of the community to be more concerned and wiser to waste generated daily. On the other hand, human resource capabilities are also one of the advantages of Smash. From the technical aspect occupied by talented and highly mastering talents in their fields and supported by national and international certifications. Currently Smash is also establishing several strategic partnerships with various stakeholders in waste sector, including the Government (MEF, MFM, Ministry of PWHS, Ministry of Energy and Mineral Resources, Ministry of Industry, Ministry of Maritime Affairs, DLH West Java Provincial Government), Industry (Unilever SEAA, Unilever Indonesia, Danone Aqua, P & G Indonesia, Nutrifood), Banking (BI & OJK, Bank Mandiri, Bank BNI), Telco Providers (PT. Telkom Indonesia, PT. Telkomsel), NGOs (UNDP, EKONID Germany). Another strength that Smash can carry to date is the absence of the competitors exactly doing the same business model and

completeness of the solution provided. This opportunity could be concluded that smash must run as fast as possible in developing the business so as not easily overtaken by competitors.

2) Weakness. Smash weakness is not having an offline/physical business so that Smash business continuity is highly dependent on collaboration and also good relationship with Trash Bank as one of the main stakeholders. The ability in marketing today is still one of the shortcomings in the team where at the current stage, Smash must have a higher focus in marketing. Apart from that, the fact that it has not been able to make profit is also one of the other shortcomings of Smash. Another disadvantage is that the active registered Waste Bank is only 38% where most of the registered Waste Banks that have not been active have problems in the technology adoption process and lack of infrastructure and human resources in each Waste Bank.

3) Opportunity. From social aspects in the form of environmental impacts, through Smash it can be identified that there are 134 tons of waste that is managed and has been presented in the form of data that can be processed for more information. The information that can be obtained includes the distribution of waste tonnage based on waste categories, distribution in the region and average prices circulating, both at local and at national levels. From economic aspect, it can be seen that money circulation in Smash is 625,519,536 rupiahs. This amount indicates that waste transactions have been running in significant numbers. Other opportunities come from the need to cooperate with the government, that in this case is the use of data and information processed in the waste field and the preparation of relevant regulations to improve governance and a better decision-making process. The Corporate Social Responsibility (CSR) program from SOEs and private companies is also another opportunity because the program is in direct contact with the efforts and the activities carried out by Smash in the digitizing of waste management activities. In addition, collaboration with All Indonesia Waste Bank Association (ASOBSI) is also an opportunity, given the role and function of ASOBSI in overseeing and improving the management of Waste Bank throughout Indonesia. Other opportunities come from the trend of using digital money in Indonesia which has increased significantly from year to year. This is in line with the government's efforts to realize financial inclusiveness and cashless society in all parts of Indonesia.

4) Threat. Threats that have been seen in front of the eyes, one of them against pickup service provider. Pickup service in Indonesia right now is controlled by the largest startup in Indonesia, Gojek. This threat is likely to happen if Gojek decided it wanted to expand its wings to the social field and focus to bring solutions and management services as well as trash pickup services. Furthermore, other threats as providers of electronic transaction systems, there are operational and legal risks. In terms of operational risk, to ensure customer security, transactions use PIN of 6 (six) digits which refers to the transaction requirements. This PIN is filled in by the customer when confirming the transaction and is used only for financial transactions. To guarantee PIN security, the PIN is only stored on the electronic money

system so that the security of transactions is more secure. In addition, the Smash brand reputation risk will be maintained properly through the trademark registration process at the Ministry of Law and Human Rights. In terms of legal risk, the registration process at Smash is carried out through the approval process of terms & conditions as well as applicable

policies and is understood consciously by its users. Rapid technological development is also a threat because this means that innovations that have been made easy to replicate, and relevance to the needs of users has decreased.

	<i>Strength</i> 1. Nationally integrated concept 2. Digitalized process 3. Unique Selling Proposition 4. Simple Process 5. Having partners with private companies	<i>Weakness</i> 1. Not having offline services 2. Good relationship 3. Low rate of active Trash Bank using Smash 4. Still not profitable 5. Limitations of marketing team
<i>Opportunities</i> 1. Social & economic impact 2. Collaborating with government 3. Collaborating with ASOBSI 4. CSR programs 5. Use of digital money	<i>S-O Strategy</i> 1. Implementing national integrated apps to fulfill government needs of trash management mapping (S1, S2, O2) 2. Increasing social and economic impact using digitalized process (S3, O1) 3. Improving socialization regarding the benefits of using applications in collaboration with ASOBSI and CSR programs (S4, O3, O4, O5)	<i>W-O Strategy</i> 1. Creating offline services that increase social and economic impact (W1, O2, O3) 2. Maintain good relationship with stakeholder to create barrier for competitor (W2, O1) 3. Collaboration with the government to regulate the use of online-based applications (W3, O4) 4. Cooperating with CSR programs so that transaction turnover in the Waste Bank increases and produces profiles for Smash (W4, O5)
<i>Threat</i> 1. Pickup services 2. Operational and Law Risk 3. Technological developments 4. Appearance of similar applications based on the area of waste bank	<i>S-T Strategy</i> 1. Establish a pickup service with digitalized process (S2, T1) 2. Minimizing operational and law risk by considering national regulation (S1, T2, T3)	<i>W-T Strategy</i> 1. Collaborating with partner that have offline services to create a pickup service (W1, T1) 2. Minimizing operational and law risk to increase the activity of Waste Bank users (W3, T2) 3. Continuously innovating and making profit (W4, T3)

Fig 14. Mapping SWOT Analysis

E. Strategy Formulation

Based on the analysis that has been done, it can be concluded that the strategy formulation of the Smash application is to become a leader among competitors, as an online waste application that has been running for 3 years and has national coverage in all regions of Indonesia. The effort taken to maintain competitive advantage is to maintain service and excellence and continue to create sustainable innovation in accordance with user needs. As explained in the Fleisher and Bensoussan research [6], companies that can maintain a dominant position can use strategies in the form of direct competition with competitors, one of which fills a gap that has not been filled by competitors, especially new players. Therefore the recommended strategies formulation based on SWOT analysis mapping are:

1. Implementing national integrated apps to fulfill government needs of trash management mapping (S1, S2, O2)
2. Increasing social and economic impact using digitalized process (S3, O1)
3. Improving socialization regarding the benefits of using applications in collaboration with ASOBSI and CSR programs (S4, O3, O4, O5)
4. Establish a pickup service with digitalized process (S2, T1)
5. Minimizing operational and law risk by considering national regulation (S1, T2, T3)
6. Creating offline services that increase social and economic impact (W1, O2, O3)

7. Maintain good relationship with stakeholder to create barrier for competitor (W2, O1)
8. Collaboration with the government to regulate the use of online-based applications (W3, O4)
9. Cooperating with CSR programs so that transaction turnover in the Waste Bank increases and produces profiles for Smash (W4, O5)
10. Collaborating with partner that have offline services to create a pickup service (W1, T1)
11. Minimizing operational and law risk to increase the activity of Waste Bank users (W3, T2)
12. Continuously innovating and making profit (W4, T3)

These strategies have been discussed with the decision maker of Smash and has been accepted to become the strategy for encounter competitor threat.

IV. CONCLUSION

Based on the results of the research and strategy waste management system analysis by using the Competitive Positioning Analysis method on the Smash online-based waste application, it can be concluded as follows:

- 1) Based on the analysis on the results of market identification, products, and existing strategies of the company, it can be concluded that Smash application is the market leader in the online based waste management application industry. The strategy used by Smash application as a market leader is developing the overall market, maintaining service and excellence, and continuing to create

sustainable innovations according to user needs. In addition, the strategy related to the market in the form of market optimization which is overall market development was performed by increasing the number of users and increasing the use of Smash applications in the registered waste banks.

Traction enhancement and user activity can be done by socializing both old and prospective new users, diversifying products, improving the appearance to be more user friendly, and simplifying the process. Once the target market has been successful, the next effort is to maintain the market by expanding production capacity/ infrastructure, maintaining relationships with suppliers, and providing loyalty programs for users.

2) It can be concluded that Smash application has a market share consisting of three groups, namely Waste Bank, Government, and Society. Smash application positions itself as an integrated national waste application solution that can connect various stakeholders in waste sector. With the market share that has already been identified, Smash application will continue to strive to expand market share in ways such as cost efficiency and product mix.

3) No other competitors has really threatened the advantages of the Smash application so far because the application offered must have the power of complete services and features, good quality, and the price that is more competitive but still provides profit margins for service providers.

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