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GREEN POLICY MEETS RETAIL EFFICIENCY: THE CASE OF PLASTIC BAG BAN IN ALFAMART, BANYUMAS

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Abstract

This research aims to analyze how the plastic bag reduction policy contributes to operational efficiency in the retail sector, using Alfamart in Banyumas Regency, Indonesia, as a case study. This policy is part of the local government's green economy initiative to reduce plastic waste and promote sustainable business practices. The study adopts a qualitative descriptive approach, utilizing in-depth interviews with Alfamart management, local government officials, and consumers, complemented by SWOT analysis. The findings indicate that eliminating single-use plastic bags leads to significant cost savings, particularly by removing expenses associated with plastic bag procurement. Furthermore, the company gains additional revenue from selling eco-friendly bags and related sustainable products. This policy also enhances the brand image as an environmentally responsible business. However, the research identifies initial challenges, including consumer resistance and behavioral adaptation issues, which could lead to temporary customer loss. Despite these challenges, continuous consumer education and promotional strategies effectively mitigate the negative impacts. The SWOT analysis further reveals that the company is in a strong position to transform environmental regulations into competitive advantages through operational efficiency and market differentiation. The practical implication highlights that environmental policies can serve not only as compliance measures but also as business strategies to improve cost efficiency and competitiveness. Limitations of this study include a narrow focus on one retail chain and a specific type of waste reduction. Future research is recommended to explore broader waste management impacts, apply quantitative methods, and conduct longitudinal studies to assess long-term behavioral changes.

Keywords: Plastic Bag Reduction Policy, Green Economy, Operational Efficiency, SWOT Analysis, Retail Sustainability

INTRODUCTION

Plastic waste is a critical environmental issue at the global level. In 2021, the Asia-Pacific (APAC) region produced 52% of the 390.7 million tons of plastic produced globally (Stevenson & Nodet, 2023). Indonesia, as one of the countries in Asia, ranks second as a contributor to mismanaged plastic waste, reaching 3.22 million metric tons per year, and is projected to increase to 7.42 million metric tons per year by 2025 (Jambeck et al., 2015). According to data from the Ministry of Environment and Forestry (KLHK), Indonesia's total waste generation in 2024 is recorded at 34.21 million tons, with the largest composition coming from food waste (39.25%) and plastic waste (19.73%) (KLHK, 2024b). Central Java Province is the third-largest contributor to national waste, after West Java and East Java, with a total waste generation of 5.04 million tons per year, of which 14% is plastic waste (KLHK, 2024b). In Central Java Province, Banyumas Regency is the most competent in reducing waste, as evidenced by Banyumas Regency ranking second in the waste reduction category in Central Java Province (KLHK, 2024a). Banyumas Regency's achievements in reducing waste are quite good, but the amount of waste generated is still quite high, at around 230,000 tons per year, ranking eighth highest in Central Java. According to data from the Banyumas Environmental Agency (DLH), 30% of the 230,000 tons of waste generated is

plastic waste. This figure is significantly higher than the national and provincial plastic waste percentages, which remain below 20%. This indicates that efforts to reduce plastic waste must be further strengthened, particularly in the consumption sector (KLHK, 2024a).

The Banyumas Regency Government has implemented a plastic bag reduction policy outlined in Regent Regulation No. 14 of 2019 to reduce waste, particularly plastic waste. This policy is an important part of implementing the green economy concept, which integrates economic growth with environmental protection and social welfare, closely linked to sustainable development, where resource management is carried out efficiently, fairly, and environmentally friendly. Furthermore, the application of the green economy at the business level promotes corporate efficiency, including cost reduction of raw materials, optimization of operational processes, and the creation of added value through environmentally friendly innovations (United Nations Environment Programme, 2018). The plastic bag policy requires modern minimarkets, shopping centers, and various public facilities to stop providing single-use plastic bags and replace them with environmentally friendly alternatives such as paper bags or reusable bags.

One sector that significantly contributes to plastic waste generation is minimarkets. Minimarkets are the primary distribution points for daily consumption, which in practice heavily rely on the use of single-use plastic bags. Alfamart, as one of the largest modern minimarkets in Indonesia with approximately 19,600 outlets, has a strong commitment to environmentally friendly business practices, such as the “Clean and Green” program, which focuses on education about reducing plastic waste and environmental conservation since 2009 (Riyanto, 2022; Julianto, 2016). Additionally, Alfamart is a publicly listed company that promotes the implementation of good governance standards and compliance with Environmental, Social, and Governance (ESG) principles (Zahira, 2022).

Previous research has shown that green economy policies can improve environmental quality and have a direct impact on economic growth and the creation of new jobs (Ringel et al., 2016). Environment-based interventions not only reduce ecological pressure but also have positive spillover effects on the efficiency and productivity of surrounding areas. This means that environment-based policies can be a driving force for inclusive and sustainable economic growth. Studies by Liu and Dong (2021), Kim et al. (2024), and Zhang et al. (2023) indicate that green technology innovation, green logistics, and green finance in supporting the green economy have been proven to improve cost efficiency, operational optimization, and enhance corporate competitiveness. Other studies by Wang & Li (2021), Wang et al. (2021), Adeyanju et al. (2021), Desalegn & Tangl (2022), Wang et al. (2023), and Doorn et al. (2024) state that plastic bag restriction policies have successfully reduced plastic use significantly while fostering new social norms in society toward greater environmental friendliness. This behavioral change occurs due to regulatory pressure, making consumers more aware of the environmental impact of their consumption habits, leading them to switch to reusable shopping bags or reduce the use of single-use packaging. For companies, this change directly impacts efficiency, such as reducing plastic bag procurement costs, decreasing the volume of waste to be managed, and creating new business opportunities in providing environmentally friendly products, which ultimately strengthens operational efficiency and enhances business competitiveness in the long term.

Given these conditions, this study is important for analyzing the implementation of plastic bag restriction policies and their impact on operational cost efficiency within the Alfamart minimarket network in Banyumas Regency. This study employs a qualitative method with an in-depth interview approach targeting Alfamart management, local government officials, and other relevant parties, supplemented by a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). This study is expected to contribute not only to the literature on the green economy but also serve as a basis for local governments and businesses to design effective and sustainable environmental policies, as well as encourage business efficiency while supporting the achievement of sustainable development goals (SDGs), particularly SDGs 8 (decent work and economic growth), SDGs 10 (reduction of inequality), and SDGs 13 (climate action).

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

1. Sustainable Development and Green Economy

Sustainable development is the main foundation for the development of a green economy. This concept emphasizes meeting the needs of the current generation without compromising the ability of future generations to meet their needs (United Nations, 1987). The green economy is derived from the concept of sustainable development, which places greater emphasis on the synergy between economic growth, environmental sustainability, and social justice (United Nations Environment Programme, 2018). In the context of development economics, a green economy is a structural transformation approach toward a low-carbon, resource-efficient, and inclusive economy. The main framework of a green economy includes three pillars: (1) inclusive and sustainable economic growth, (2) environmental protection through resource efficiency, and (3) improved social welfare. The implementation of policies such as plastic bag restrictions is a concrete example of the principles of resource efficiency and environmental impact reduction.

2. Efficiency Theory

M.J. Farrell's efficiency theory in economics explains how companies can maximize output with certain inputs. Efficiency is divided into two types: technical efficiency and allocative efficiency. Technical efficiency is the ability to produce maximum output from certain inputs, while allocative efficiency is the ability to use the optimal combination of inputs based on prices and costs (Forsund, 2016). According to Porter's Hypothesis, well-designed environmental regulations not only prevent pollution but also encourage innovation that improves operational efficiency and corporate competitiveness (Porter & Linde, 1995).

3. Previous Research

The implementation of green economy policies not only contributes to improving environmental quality, but also has a direct impact on economic growth and the creation of new jobs (Ringel et al., 2016). These findings indicate that environment-based interventions can reduce ecological pressure while providing spillover effects in the form of increased efficiency and productivity in surrounding areas. This occurs because the implementation of green policies drives transformation in production, distribution, and consumption processes toward greater efficiency and sustainability, thereby becoming a driving force for an inclusive economy.

Studies by Liu and Dong (2021), Kim et al. (2024), and Zhang et al. (2023) state that green technology innovation, the implementation of green logistics, and the strengthening of green finance within the framework of a green economy have proven to enhance cost efficiency, operational optimization, and strengthen corporate competitiveness. These results can be explained because green innovation encourages companies to minimize waste, conserve resources, and integrate environmentally friendly practices throughout their entire business value chain.

In the context of plastic waste reduction, policies restricting the use of plastic bags have significantly reduced plastic consumption (Doorn et al., 2024; Wang et al., 2021; Wang & Li, 2021; Wang et al., 2023; Adeyanju et al., 2021; Desalegn & Tangl, 2022). Additionally, plastic bag restriction policies have encouraged the formation of new social norms in society to

behave more environmentally friendly. This behavioral change occurs due to regulatory pressure that increases consumer awareness of the negative impacts of single-use plastics, thereby encouraging the use of reusable shopping bags or more sustainable packaging alternatives. From a business perspective, this change in public behavior has a positive impact on operational efficiency, such as a reduction in the cost of procuring plastic bags and a decrease in the volume of waste that must be managed. In addition, new business opportunities have emerged in the provision of environmentally friendly products, which overall strengthen the efficiency of companies and increase business competitiveness in the long term.

4. Literature Synthesis

Based on previous theories and research findings, it appears that green economy-based policies, including restrictions on plastic bags, not only provide environmental benefits but also support economic efficiency at the company level. This is in line with the principles of sustainable development, which encourage economic transformation towards a more resource-efficient, low-carbon, and inclusive model. This study fills a gap by specifically analyzing how plastic bag reduction policies contribute to the operational cost efficiency of minimarkets, which has rarely been studied in depth in the context of economic development in Indonesia.

RESEARCH METHODS

This study uses a descriptive qualitative approach that aims to gain an in-depth understanding of how the implementation of plastic bag restriction policies affects the operational cost efficiency of Alfamart minimarkets in Banyumas Regency. The research location is in the operational area of Alfamart in Banyumas Regency, with the research object being Alfamart management that implements plastic bag reduction policies.

Data collection techniques were conducted through in-depth interviews with Alfamart management, the Banyumas Regency Environmental Agency (DLH), and consumers. Additionally, data was obtained from direct field observations and documentation in the form of company reports, sustainability reports, and applicable policies. The primary research instrument was the researcher themselves, assisted by interview guidelines and observation checklists.

Data analysis was conducted using an interactive analysis method, which includes data reduction, data presentation, and drawing conclusions. Furthermore, this study also utilized SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) to evaluate the strengths, weaknesses, opportunities, and threats faced by Alfamart in implementing its plastic bag reduction policy, particularly in relation to cost efficiency and operational sustainability.

RESULTS AND DISCUSSION

1. Implementation of Plastic Bag Restriction Policy

The plastic bag restriction policy at Alfamart Banyumas was implemented in 2020 as a follow-up to Regent Regulation No. 14 of 2019. The implementation was carried out through internal socialization to employees, installation of educational media in stores, and cessation of distribution of single-use plastic bags from the center to all outlets in the Banyumas area. The impact on store operations was significant, particularly in terms of reduced costs for plastic bag procurement. Prior to the implementation of the plastic bag restriction policy, each Alfamart store in Banyumas averaged 34,000 plastic bags per month, with operational costs totaling Rp 2,025,000.00,00 monthly. One of the most significant changes is the elimination of plastic bag purchase costs, which had previously been a routine component of store operational costs. This finding indicates a significant contribution to operational cost

efficiency, aligning with the green economy pillar related to resource efficiency (United Nations Environment Programme, 2018).

2. Impact on Cost Efficiency and New Revenue

The interview results show that in terms of efficiency, the elimination of plastic bags has a direct impact in the form of reduced operational costs. Based on the data obtained, all stores experienced a decrease in operational costs because spending on plastic bags was completely stopped. The plastic bag restriction policy has enabled Alfamart to save an average of 24 million per year in operational costs. From Alfamart's perspective, the elimination of plastic bag purchase costs and the increase in revenue from the sale of eco-friendly bags are direct evidence that this policy contributes to improved operational efficiency. These findings align with a study by Adeyanju et al. (2021), which confirms that bans accompanied by education or taxes have the most significant impact on behavioral change and consumption reduction. The plastic bag ban has proven to be quite effective in reducing consumption and costs, although challenges in implementation are acknowledged.

3. Challenges in Changing Consumer Behavior

The policy to restrict shopping bags in Banyumas is beneficial in terms of costs, but in the early stages of implementation, it faced challenges in terms of consumer behavior adaptation. Consumers showed resistance, especially those who shopped spontaneously without bringing their own bags. Some consumers also chose to switch to stores that still provided plastic bags. In response to this situation, Alfamart has attempted to raise awareness about the restriction on plastic bag use and distribute free shopping bags during Car Free Day events. Alfamart also offers incentives to members who receive free shopping bags for every certain amount of purchases. These findings align with global studies highlighting substitution effects and adaptation challenges. Wang & Li (2021) state that bans or charges on plastic bags do reduce the use of new plastic bags but increase the use of used shopping bags.

Banning plastic bags can enhance social norms to avoid plastic bags. However, banning plastic bags without ongoing education can have negative effects, such as reduced environmental concern after feeling sufficiently contributed (Doorn et al., 2024). This phenomenon also emerged at the beginning of plastic bag restrictions at Alfamart but was minimized through consistent education. Alfamart installed educational media inside and outside the store in the form of posters or banners. Alfamart also conducted education in the form of campaigns through official Alfamart digital media as well as direct education from cashiers with scripts or reminders delivered during transactions. Education that is carried out periodically makes consumers not only comply because of the rules, but also develop strong ecological awareness and responsibility.

The plastic bag restriction policy has opened opportunities for the development of environmentally friendly products such as cloth bags and non-plastic tableware. Alfamart has even collaborated with local SMEs to supply some of these products. This opportunity not only provides additional income but also strengthens Alfamart's brand image as a pioneer in environmentally friendly retail in Banyumas. This research is supported by the study by Wang et al. (2023), which confirms that policies accompanied by high participation from the community or consumers and education will have a more lasting effect and create new business opportunities. Policies restricting plastic bags and similar items can drive market change and open up space for environmentally friendly product innovation (Desalegn & Tangl, 2022).

Table 1. SWOT Analysis of Research Results

Aspect	Factor	Dexcription
Strength	Cost efficiency, New revenue, Environmentally friendly brand image, Promoting circular economy	The elimination of plastic bags reduces operating costs and opens up new revenue streams from the sale of alternative bags and environmentally friendly products.
Weakness	Customer adaptation, education costs, and initial resistance	Challenges in the early stages due to changes in customer behavior, as customers are not yet accustomed to bringing their own bags.
Threat	Customer migration to competitors and competition from stores that have not implemented the policy	The risk of losing customers who are unwilling to adapt, as well as competition from stores that still provide plastic bags.

Table 1 shows the results of the SWOT analysis that Alfamart's position in facing the plastic bag reduction policy is in a relatively strong situation, with the potential to convert environmental policy into a profitable business strategy. The main strengths in the form of cost efficiency and image enhancement as an environmentally friendly business open up opportunities to expand the market in consumer segments that are increasingly aware of sustainability issues. This strength must still be managed carefully given the challenges in the form of changes in customer behavior that do not always run smoothly, especially in the initial transition phase of the policy.

The combination of weaknesses and threats is an important signal that strengthening communication and education strategies cannot be delayed. Customer resistance and the potential for switching to competitors that have not implemented similar policies are real risks that require a quick response. Therefore, an approach that focuses not only on operations but also on building customer awareness and strengthening loyalty is very important in maintaining the sustainability of the benefits of this policy, both in terms of environment and business efficiency.

Table 2. SWOT Matrix of Plastic Bag Restriction Policy at Alfamart in Banyumas Regency

Strategi SO	Strategi WO	Strategi ST	Strategi WT

Utilize cost efficiency to develop more eco-friendly products (cloth bags, eco-friendly cutlery).	Overcome customer adaptation by increasing educational programs, free bag promotions, or incentives.	Brand image is used as an eco-friendly store to face competitors who still provide plastic bags.	Accelerate the education process to reduce turnover to other stores.
Using an eco-friendly brand image to attract the environmentally conscious consumer market segment.	Reduces resistance and offers a more attractive and affordable eco-bag design.	Offer discounted products or services for shoppers who bring their own bags.	Monitor market trends and consumer behavior to prevent substitution to non-official bags or shopping elsewhere.
Optimizing new revenue from eco-friendly bags and expanding cooperation with local MSMEs.	Leveraging green consumption trends to accelerate customer behavior change.	Maximize cost efficiency to keep prices competitive for low potential customer loss.	Develop a loyalty program so that customers still choose to shop at Alfamart even without bags plastic.
Strengthen collaboration with the government for Corporate Social Responsibility programs.	Leverage government support in assisting education campaigns to reduce early resistance.	Using new revenue from alternative pockets to support promotions and customer loyalty.	Reduce reliance on bagged products by increasing the convenience of alternatives.

Table 2. illustrates the policy directions and strategic steps that companies can take in responding to the implementation of plastic bag restrictions, within the SWOT framework. The SO (Strength-Opportunity) strategy is an approach that utilizes internal strengths to seize external opportunities. In this context, companies can optimize cost efficiency and improve their eco-friendly image to expand sustainable product lines and increase the loyalty of environmentally conscious consumers. Alfamart utilizes strengths to seize opportunities by cooperating with local MSMEs for the supply of environmentally friendly products. These products can be in the form of cloth bags, paper bags, and other environmentally friendly products that are massively sold in all stores with attractive, reusable, and fashionable designs so as to increase consumer attractiveness to buy. Alfamart utilizes its image as an environmentally friendly store in promotions, banners, and social media.

Unlike the SO strategy, the WO (Weakness-Opportunity) strategy aims to overcome internal weaknesses by capitalizing on external opportunities. This includes efforts to improve the customer education process and increase service convenience, along with the trend of increasing consumer awareness of environmental issues. Alfamart educates customers through posters,

cashiers, and active promotions at Car Free Day and CSR activities. Education carried out can be in the form of a campaign to bring shopping bags to reduce public resistance. In reducing weaknesses, Alfamart utilizes government support in socializing plastic-free policies to the community around the store. Alfamart also provides free bag promos with a certain minimum shopping.

The ST (Strength-Threat) strategy focuses on utilizing internal strengths to face or minimize potential external threats, such as competition from other stores that have not implemented similar policies or potential customer displacement. Alfamart in using strengths to overcome threats provides rewards to members who spend a certain nominal with the provision of free shopping bags. Alfamart strengthens customer service and shopping convenience such as adding trolleys or baskets. In addition, Alfamart also needs to emphasize its image as an environmentally friendly minimarket compared to other stores that still provide plastic bags.

The WT (Weakness-Threat) strategy is defensive in nature, which is directed at minimizing weaknesses while avoiding or reducing the impact of existing threats. In the context of this research, this strategy is relevant to reduce the risk of losing customers due to resistance to policies and facing competition from stores that still provide plastic bags. Alfamart accelerates the education program on social media and directly in the store by displaying leaflets and posters. Alfamart also provides a practical solution, namely paper bags which are sold at affordable prices. In addition, Alfamart also needs to monitor customer responses regularly if complaints arise regarding this policy. Thus, this entire SWOT matrix not only provides direction for strengthening operational efficiency, but also serves as a reference in designing sustainable adaptation strategies, both from a business and environmental perspective.

CONCLUSION

The plastic bag restriction policy implemented at Alfamart Banyumas Regency not only has a positive impact on the environment, but also results in significant cost efficiency for the company. The elimination of the cost of purchasing plastic bags provides direct savings of 24 million per year on operations, while opening up new sources of income through the sale of environmentally friendly bags and other sustainable products. This is in line with green economy principles that emphasize economic efficiency along with environmental protection.

The practical implications of this research show that environmental policies implemented in the retail sector are not a burden, but instead have the potential to become a profitable business strategy. Through SO strategies, companies can maximize cost efficiency and positive image to expand sales of environmentally friendly products and reach market segments that care about sustainability. On the WO side of the strategy, it is important for the company to continue to strengthen customer education and improve service convenience so that the adaptation process runs faster. Meanwhile, the ST strategy confirms that the company's strengths need to be used to face potential competition from other stores that have not implemented similar policies, by offering better services, attractive promotions, or sustainability-based loyalty programs. The WT strategy is a reminder that efforts to retain customers must be balanced with mitigating the risk of resistance, for example by providing practical shopping solutions without plastic bags and continuously monitoring customer responses. In addition, local governments also have an important role to play in continuing to encourage public education, strengthening collaboration with businesses, and ensuring that this policy does not only work at the formal level, but is also supported by real behavioral changes in the community.

This study has several limitations. The scope of the study only focused on one retail chain and was limited to the reduction of plastic bags, so it did not cover overall operational waste or

broader environmental impacts. In addition, the qualitative approach used is descriptive in nature, so it has not been able to quantitatively measure the impact on waste volume or carbon emissions. Therefore, future research is recommended to expand coverage to different types of retailers in different regions, use a quantitative approach to measure impacts in a more quantifiable way, and expand the focus not only on plastic bags but also on other operational waste management. Longer-term studies are also important to ascertain whether changes in consumer behavior actually persist and have an impact over a longer period of time.

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