

# Engagement Strategies for Stakeholder Management in New Technology Development in the Fertilizer Industry – A Conceptual Framework

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**Abstract**—Communication is becoming a significant tool to engage stakeholders since half of the century ago. In the recent years, there has been rapid growth of new technology developments. In tandem with such developments, there has been growing emphasis in communication strategies and management especially in determining the level of influence and management strategies among the said stakeholders on particular field. This paper presents a research conceptual framework focusing on stakeholder theories, communication and management strategies to be implied on the engagement of stakeholders of new technology developments of fertilizer industry in Malaysia. Framework espoused in this paper will provide insights into the various stakeholder theories and engagement strategies from different principal necessary for a successful introduction of new technology development in the above stated industry. The proposed framework has theoretical significance in filling the gap of the body of knowledge in the implementation of communication strategies in Malaysian fertilizer industry.

**Keywords**—Communication Strategies, Fertilizer Industry, New Technology Development, Stakeholders Management.

## I. INTRODUCTION

THE increase in demand of food or cash crops worldwide contribute to the increase demand of fertilizer around the world [1]. Similar to other agriculture sectors, the fertilizer industries are expanding in term of new technology development in order to cater for the high demand of the products. In the manufacturer's effort in meeting the expectation and demand of fertilizer today, there has been a tremendously growing concerns and pressure for a greener technology. Greener technology is becoming highly demanded by the society and environmental activists. Hence, manufacturers are pressed for innovations in the technology

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used. It has become a manufacturer's reality, as 84% of the companies surveyed in a recent Forrester study said they have green or socially responsible products in development or on the market [2]. The demand of green technology agitates the development of new technology in many areas [3] including fertilizer industry.

In Malaysia, the fertilizer industry is considered competitive with more than 50 companies involved in this sector with 2 million metric ton of production per annum [4]. As most of other fertilizer companies around the world improvise their technologies, companies in Malaysia are on the same track. They are making new technology to develop a fertilizer product that can satisfy specific demands by certain types of crops [5]. However, positioning a new product in the market could be challenging especially when it involves various types of stakeholders. The stakeholders' perspectives provide important information in the diffusion of new technology in the market [6].

Engagement is an integral part in developing the understanding of the industry and the risks it presents to the public. This helps to shape regulation and the future plans. It is necessary to get engagement strategies on particular context as different levels of engagement are likely to be appropriate in different contexts, depending on the objectives of the work and the capacity for stakeholders to influence outcomes [7], [8]. Despite the intensive amount of research in creating new technology in the Malaysia fertilizer industry, there is still lack of findings in determining the stakeholders in the industry and also the ways to communicate and engage them. Even more, most of the engagement strategies are plan on corporate governance [9], deflecting criticism [10] and constructing image for the firm [11]. There are lack of findings and study on appropriate stakeholder engagement toward New Technology Development (NTD) and its acceptance by the stakeholder. The research framework presented in this paper attempts to examine the engagement approach used and the level of engagement on different kind of stakeholders of this industry.

Thus, this paper will discuss the conceptual framework for a research in stakeholder engagement. A study will be conducted based on this conceptual framework which is empirical findings shall potentially be deemed crucial in providing insights into the various engagement strategies

necessary for a successful introduction of new technology development in the fertilizer industry. The conceptual framework espoused in this paper has theoretical significance in filling the gap in the body of knowledge in the development and implementation of engagement strategy for new technology development in the Malaysian fertilizer industry.

## II. LITERATURE REVIEW

### A. Stakeholders Theory

Edward Freeman classical definition of stakeholder [9] was the famous definitions used until nowadays cited by more than 179 articles worldwide [12]. He stated in his classic book, *Strategic Management: A Stakeholder Approach*, stakeholders is any group or individual who can affect or is affected by the achievement of the organization's objectives [9]. Initial intent was to offer a pragmatic approach to strategy that urges organizations to be cognizant of stakeholders to achieve superior performance. As quoted by [12], Freeman stated, "The stakeholder idea fits into the mentality of strategically-minded corporate man-agers; in its latest phases, some companies are now justifying broader social policies and actions, not for normative reasons but for strategic purposes". At its simplest level, stakeholder theory was proposed as an alternative to stockholder-based theories of organizations [9]. Fundamentally, stakeholders should be included by all constituents not only the organization or personnel who contribute to the firm profits.

Studies based on the stakeholder theory are considered timely. In various findings of stakeholder theory, it is considered as timely yet adolescent, controversial yet important [12], [13], [14], [15], [16]. The number of misconduct, improper services by certain firms and corporate negligence to issues especially involving environment and minority's interest are increasing [12]. However, Jones argued that lack of empirical studies show that stakeholders theories are consider as adolescent and premature [16]. Stakeholder theory is also controversial because it questions the conventional assumption that pursuit of profits is the preeminent management concern, which Jensen calls the "single-valued objective" of a corporation [13]. Yet it is also important because it seeks to address the often over-looked sociological question of how organizations affect society [14], [15].

In term of definitions and salience, several themes were suggested by various researchers in their findings, so that manager of a firm should pay attention to the said groups. Of course Freeman definition's was the famous one [12]. He used Internal and external stakeholders, cooperative and competitive stakeholders as his suggestions. Some of the researchers had named natural environment as an important stakeholder [17], [18], [19]. Schwartz even suggested god as important stakeholder for a firm [20]. Others suggested groups with resources and network power [21] and institutional investors [22]. Brickson proposes that a firm's identity orientation (i.e., individualist, relational, or collectivist)

determines the nature of its stakeholder relationships [23]. Although individualistic firms tend to maintain weak (instrumental) ties, relational firms tend to maintain strong (trust-based) ties, and collectivist firms tend to have cliquish (ideological) ties. By contrast, Jawahar and McLaughlin argue that life-cycle stage pressures influence firm's stakeholder management strategies [24]. Whereas Freeman suggests that the role of management is to balance the interests of stakeholders over time [9], critics argue that the theory provides no basis for deciding between competing stakeholder interests [25]. Jensen proposes that managers look to "maximization of the long-run value of the firm as the criterion for making the requisite trade-offs among its stakeholders" [13]. By contrast, Schwartz and Beekun and Badawi argue that the devout can look to holy books for guidance on how to balance stakeholder interests [20], [26]. Some have proposed using sophisticated analytical techniques to calculate a consistent weighting scheme to balance these decisions [27]. Schwarzkopf argues that management needs to appreciate how others perceive the risks posed by their decisions [28], whereas Bendheim, Waddock, and Graves find that "best practices" for balancing and trading off between stakeholder interests differ substantially among industries [29]. Yet others argue that stakeholder representatives should be directly included in the managerial decision process to garner consensus [30] or included in mediation to more effectively resolve disputes [31]. Notably, Reynolds, Shultz, and Hekman demonstrate that unequal stakeholder saliency and imperfect resource divisibility are important constraints [32].

Although there are several theories offered in this field of research, this particular study will use the most widely accepted theories by Freeman. This theory places the whole stakeholder in general before classifying them into several groups. With that, proper communication strategies could be constructed regarding their interests and level of influence to the sustainability and acceptance of the new fertilizer technology in the market.

### B. Classification of Stakeholders

Although it is tempting to reduce business survival to the law of supply and demand, organizations inherently exist through the communication of perceived needs and desires [33]. This stresses on the importance of proper communication and well-organized groups of stakeholders. Particular attributes can be used to properly stratify them into groups [34]. As in [35], it divides stakeholders to internal and external stakeholders. The internal stakeholders include employees and managers. The external stakeholders include owners, stock analysts, local communities, government, suppliers, competitors and customers. However, reference [35] note that some stakeholders cannot be classified as internal or external, but should be considered as interface stakeholders. These are, for example, the boards of directors and auditors. Stakeholders can be classified into primary and secondary [35] and [36]. Primary stakeholders have a direct

and necessary economic impact on the organization [35]. They also have a formal official or contractual relationship with the company [35]. Examples of primary stakeholders are owners, employees, customers, suppliers, communities, the natural environment [36] as well as creditors and labor unions [35]. Secondary stakeholders are those that can affect the organization or can be affected by the organization, but are not in direct contact with the economic activities of the company [35]. These include, for example, government institutions, insurance companies and consumer interest groups [35]. Corporate responsibility performance in relation to primary stakeholders could lead to competitive advantage and increased shareholder wealth [36]. On the other hand, it is also suggested that corporate responsibility performance related to secondary stakeholders may not create value for shareholders.

A third way to classify stakeholders is to divide them into market and non-market stakeholders [37]. Market stakeholders are highly salient to managers because they are in an economic transaction relationship with the firm, and they have the ability to influence the competitive environment of the company directly [37]. Market stakeholders have more power over the firm than nonmarket stakeholders because they possess a threat of exiting the market exchange relationship with the firm [38]. Therefore, losing the confidence of a market stakeholder may hamper the company's ability to meet its performance expectations [37]. Market stakeholders include customers, suppliers, employees, financiers, owners and competitors.

Non-market stakeholders, on the other hand, include regulatory agencies, court system, government bodies and special interest groups. Non-market stakeholders are in interaction with the firm on a non-economic basis and are not directly involved in the production function of the firm [37]. Additionally, their claims tend to be less urgent and frequent compared to market stakeholders' claims [37]. Reference [39] analyzed the data of 80 CEOs and found differences regarding the salience of stakeholder groups, supporting the propositions by. The results of [39] indicated that the stakeholder salience is significantly higher in case of market stakeholders (owners, employees and customers) compared to non-market stakeholders (governments and local communities).

Stakeholders Strategy Matrix (SSM) is a matrix derived from three of the above attributes. SSM sorts the stakeholders by their level of influence and eases the management strategies. Furthermore, reference [40] found out that SSM will provide some guidance as to how managers deal with stakeholders. The most renowned SSM is by Freeman [9] which is widely still used worldwide today [40]. He suggests that stakeholder strategy matrix model suggests that firms will design strategies to address stakeholders' interests [9], depending on these stakeholders' abilities to threaten and cooperate (i.e. influencing ability) with organisations (i.e. a 2 x 2 matrix) [9], an idea that is also supported by other authors [41], [42], [35]. However, reference [42] stated that the SSM created by Freeman and Savage only include stakeholders

with direct influence to the firms. Whilst, it is true direct influence is important, stakeholders can indirectly influence other stakeholders using their position, abilities or power [42], [43]. The said stakeholders therefore are classified under 'bridging' group.

### *C. Stakeholders Management and Strategies*

It is known that stakeholder affect and are affected by an organization's actions. Communication and effective stakeholder management are important to create or maintain harmony relations between them. A public relation must be proactive and also sensitive to the demand from the stakeholders and at the same time maintaining profitability actions from the firm [33]. Reference [9], stated "we must not only participate in the strategic management processes of the organization, but additionally to scan the environment for new issues and new stakeholders and to bring these to the attention of the business unit manager responsible for unit performance". A prominent dignitary could come and personally experience the quality of the new technology in fertilizer and mentioned it to the media or society. The 'good talk' will be spread and create a positive "aura" in the products. This particular goodwill will ensure the future of the technology in the market. They and more new people identify with the firm intellectually, emotionally, and industrially [33]. However let say if a particular product is found to be detrimental, the reservoir of goodwill could still be helpful because stakeholders may give the firm the benefit of the doubt, at least until all facts are known.

From the view above, a proper relationship with the stakeholders will not only yield success but also retain its sustainability. In term of strategies, several studies had been done providing several kind of strategic approach in engaging stakeholders. Reference [13] suggested a direct maximization of profit among the shareholders. However, maximizing profit could lead to exploitation of right from another stakeholders especially employee and environment [44]. Therefore, another suggestion to rightly manage stakeholder is by creating good relationship with them. Strategic approaches for dealing with stakeholders could be (I) Improved consultation between them so that new product inputs and advantages could be easily informed, (II) Knowing the needs of stakeholders before going for any engagement, (III) Building network and alliance as a basis for trust to the target groups. Reference [45] stated that information that is gained through trusting relationships can be used to create value. As elaborated by [46] in their model of utility function, a good relationship plus knowledge about stakeholders will yield advantages to firm such as increased demand and efficiency, increased innovation, great ability to deal with unexpected changes.

### *D. Engagement Strategies and Management of Stakeholders for NTD*

New Technology Development through its innovation contributes not only for well-being of mankind but also towards sustainability of the environment. In the early decade

of 1990's, the development of NTD is more on preserving the Mother Nature. It was agreed that going green is not only good to environment but also provides a competitive advantage for business [47], [48]. Thus, it provides good communication strategies and management on promoting any NTD in the current market. It is not a good strategy to market new items or developing a new technology without knowing the demand from the market. Thus, the marketers depend on the stakeholders for any input before developing a new product [49] as the marketers are unfamiliar with the situation and also environment. Developers may be forced to rely on a broad set of stakeholders. Solely depend on customers and suppliers might be insufficient especially these groups do not have all the essential information needed on certain issues such as environment. By knowing that the competition trend in the market will increase the probability of product success, such knowledge can only be earned by recognizing competitor as one of the stakeholders during the development of new technology [50]. Reference [51] stated in their findings that when setting up coordination mechanisms, the results suggest that a mix of formal and informal coordination mechanisms, with some built-in redundancy, works best to achieve integration of multiple stakeholder issues in NTD. Furthermore, when prioritizing stakeholder issues, managers should be aware that to manage the tension between stakeholder issues, several principles need to be formulated to guide the decision-making. Organizations that have the attention to develop greener products may benefit more from a more structured approach that enables them to address many nonmarket stakeholder issues.

Various cases had been reported showing firms that involve a broad set of stakeholders during their NTD process. For instance, worldwide known fast food franchise, McDonalds consulted with the Environment Defence Fund before replacing their polystyrene clamshell packaging, thus improving their image as an environmental friendly firm [52]. Therefore, it is suggested for firms to form strategic alliance with the stakeholders. The strategic alliance should involve internal stakeholders as these groups control key resources or have specific expertise that can bring a new technology to the market more quickly [53]. Still alliances with external stakeholders are crucial as they are capable to influence the marketing behaviour [42].

A proper approach is therefore required to address the said groups. Four (4) common approaches of stakeholders in positioning a new technology in the market [49]. First one is isolationist approach where a firm try to minimise the impact of a given stakeholder without directly interacting with the stakeholder. This approach is also known as buffering approach [54]. A firm will normally insulate itself from external pressure from influencing its environment through contribution to political committees, lobbying and also advocacy advertising. By that, a firm can continue with the activities as the engagement process had been done by the authorities. Adapting this approach could be beneficial as the marketers will be fewer burdens in providing strategies to

engage potentially threatening stakeholder. The second approach is aggressive approach. Firms will intensively push the said stakeholders to change the rules by which stakeholders operate, modify stakeholder's belief about the firm, or refocus their objectives [49]. These two methods intend to treat stakeholders as something to be managed rather than a force to interact with [42].

The third approach is adapting approach where the firm modifies its behavior according to the stakeholder's interest or objectives. The firm can take all or part of the objectives to suit their needs. The last approach is cooperative approach that results in stakeholders being integrated into the firm's decision processes, and thus outcomes are jointly determined. These last two approaches are considered as more proactive strategies in engaging stakeholders [49]. Adapting a more proactive approach will result in the firm modifying its behavior to take on all or part of its stakeholders' objectives. The cooperative approach results in stakeholders' concerns are being integrated into the firm's decision processes, and thus outcomes are jointly determined [42]. The strategy of forming joint ventures or strategic alliances is an example of the interdependent nature of the firm and its stakeholders. Successful joint ventures and strategic alliances require a desire to achieve a common set of objectives and thus is an important addition to those originally suggested by [9] and [35].

#### *E. Malaysian Fertilizer Industry*

The Malaysian government has committed to promote and maintain agriculture as the third engine of growth in the country's economy and this sector has maintained its GDP contribution at about 8.1% of an enlarged national GDP of RM738.67 billion in 2008 [4]. The importance of fertilizers for achieving increased crop production must be emphasized. The cultivation of high yielding crop varieties requires high and proper supply of macro- and micro-nutrients for sustained and better crop performance and yields.

Most of the fertilizers used in Malaysia are imported. Urea, ammonium based and organic fertilizers are produced in large quantities but the urea used in Malaysia is not locally produced material. The prilled urea produced in Malaysia fetched a better price and are therefore exported to the international market. The local manufacturer has two subsidiaries involved in the production of urea. These are located in:

1. Bintulu, Sarawak with a production capacity of about 600,000 tonnes granular urea and 420,000 tonnes prilled urea per year.

2. Gurun plant, Kedah exports about 65% of its annual production capacity of 650,000 tonnes.

The major importing countries for Malaysian urea were Thailand, Australia, Japan, India and the Philippines [4]. The balance from the exported granular urea sold to the National Farmer Association Malaysia for distribution.

Smallholders are usually ready to use fertilizers that are readily available to them and, most importantly, if they are

affordable and their use is profitable. There is no problem for them to buy the fertilizers as there are many dealers scattered over the country. The market for fertilizers is open and very competitive with many suppliers and dealers but prices have been rising in line with international market prices. The government helps small rice farmers with fertilizer subsidies in order to improve their farm income and hence alleviate rural poverty.

The large commercial plantations use compounds, mixtures, blends and straight fertilizers for the industrial crops. These plantations usually have their yearly budgeted fertilizer programmes to achieve the targeted yields and profits [4]. When commodity prices are low, fertilizer withdrawal or reduction is often practiced. When commodity prices are good, these plantations will switch to the use of more compound fertilizers to take advantage of labor saving and ease of applications. The success rates of completion of the annual manuring programmes using more application rounds of straight fertilizers are lower under our local weather conditions.

Since fertilizer inputs are the most expensive cost component of the production of cash crops, proper implementation of an effective fertilizer programme is very important to ensure profitability. In order to stay competitive in this industry, proper implementation of an effective fertilizer management programme and good agronomic practices is very crucial in the long term [4]. With the vast expansion of oil palm and other cash crops cultivation and the growing constraints of labor, use of new technology which can control release fertilizers for oil palm nurseries and planting application in Malaysia has also become more attractive.

### III. CONCEPTUAL FRAMEWORK

The study will be conducted in two stages. The first stage is exploratory phase where it undertakes the objective of identifying the various types of stakeholders related to NTD within the context of Malaysia fertilizer industry. The second stage will examine the types of engagement approaches used and the effectiveness of each approach on the extend of engagement level.

Conceptual framework of this study comprises 3 major components in the context of fertilizer industry. The types of stakeholder's engagement approach will measure the stakeholders' level of engagement in different classes as dependent variables. Stakeholder engagement approaches consist of isolationist, aggressive, adapting, and cooperative as independent variables. The classes of stakeholders include mixed blessing, supportive, non-supportive, marginal and bridging. New technology development will be identified as the moderating variable throughout the study. The conceptual framework will look on the relationship on each approach towards the level of engagement on different class of stakeholders.

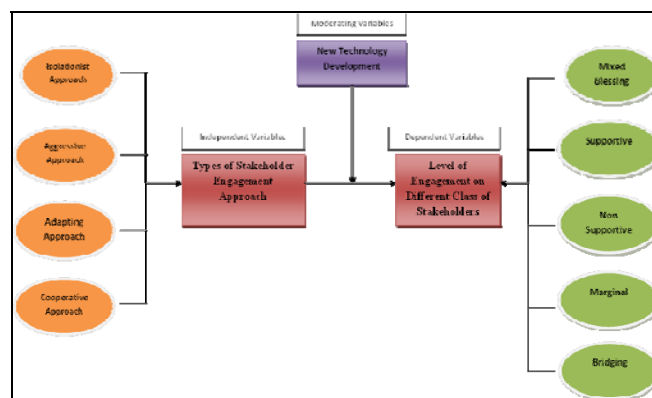


Fig. 1 Conceptual Framework of the Research

Several findings on the literature suggest the possible outcome on the stakeholder's approach toward the level of engagement on different stakeholders. It becomes the strong basis for the hypotheses of this framework.

An isolationist approach is an approach where the company/ firm will try to isolate its stakeholder from any decision from the company. The company will try to minimize impact from the said stakeholder as the stakeholder may become demanding on certain issues. However, implementing isolationist approach is not a good decision as it may backtrack to the company reputation and stake. When Indian local government tries to exclude the local communities in a forest conservation project, it gets lack of support from the people [55]. Thus, the project was regarded as failure. It indicates that an isolationist approach will bring negative impact towards the firm. Furthermore, fail to address key stakeholder early and often is the most common points of failure of any initiatives [18]. The second notable example is at Japan, when a U.S submarine ramp Japanese fishing vessel on 2001. Failed to properly explain and neglecting the media and people of Japan resulting highly condemned towards United States Navy by the people of Japan [44]. Based on the empirical evidence of isolationist approach and neglecting the stakeholders, thus Hypotheses 1 should be considered as this.

**H<sub>1</sub>** The firm/company that employs isolationist approach will have a negative impact on their level of engagement with all stakeholder classes.

Aggressive approach (e.g. pressuring, leading, or defending) is attempted to force change upon stakeholders. Firms will intensively push the said stakeholders to change the rules by which stakeholders operate, modify stakeholder's belief about the firm, or refocus their objectives [49]. According to [42], aggressive approach could also be educating target groups, advocacy and organizing protest. Greenpeace group manage to get support from stakeholders to protest on Treuhand decision to halt the production of ten hydrocarbon refrigerators resulting the company to pull back their decision [56]. Aggressive approach on stakeholders could show a positive impact towards the company/firm decision. The second cases happen in United States when the Kentucky Fried Chicken company aggressively argues against

ridiculous People for the Ethical Treatment of Animals (PETA) demand. KFC counter-argue PETA demand by robustly advocate their ethics and humane treatment towards the animal used during the production of their dishes. Making all the stakeholders ignores the demand from the PETA and still consumes KFC as their dinner [44]. From that evidences, the second hypothesis is as follows:

**H<sub>2</sub>** The firm/company that employs aggressive approach will have a positive impact on their level of engagement with all stakeholder classes.

When a company modifies its objective towards the demand and needs from the stakeholder, the company is seems as taking the adapting approach. The company includes the stakeholders during the decision making; the company/firm is using the cooperative approach. Both of these approaches are considered proactive as stakeholders are integrated into the company decision making progress. By integrating the stakeholders it will result a more positive feedback by them. Perdaman Chemicals and Fertilizers use cooperative approach by conducting survey and implementing suggestion and recommendation from the stakeholders for the improvement of their urea plant at Collie [57]. They get positive feedback as the stakeholders support the development of the plant at Collie, Australia. It shows how adapting and cooperative approach will have positive impact towards the firm/company. The third and fourth hypotheses are stated as below.

**H<sub>3</sub>** The firm/company that employs adapting approach will have a positive impact on their level of engagement with all stakeholder classes

**H<sub>4</sub>** The firm/company that employs cooperative approach will have a positive impact on their level of engagement with all stakeholder classes.

The above hypotheses can be tested by employing regression and structural equation modeling analyses. Regression analysis will enable researchers to forecast the pricing dynamic of fertilizer products in relation to the market supply and demand forces. Structural equation modeling on the other hand, will enable the validation of causal relationship among all the endogenous and exogenous variables in the espoused marketing strategy framework.

#### IV. CONCLUSION AND FUTURE DIRECTIONS

The paper presents a framework which will provide insights into the various stakeholder theories and communication strategies from different principal necessary for a successful introduction of new technology development in the Malaysia fertilizer industry. Future direction will be on collecting the necessary data on both quantitative and qualitative. Final finding will provide a clear view on developing a suitable model for stakeholder's communications and engagement strategies on NTD of the Malaysia fertilizer industry which is beneficial for the future product positioning

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