Sustainable packaged food and beverage consumption transition in Indonesia: persuasive communication to affect consumer behavior

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Abstract

Sustainable consumption transition in relation to consumers' environmental behavior and manufacturers' governance of sustainability and persuasive communication has not been adequately addressed by prior studies. This study presents theory on ecological modernization, transition management and persuasive communication to address sustainable consumption transition. This study proposes a valid set of four aspects and fourteen criteria using the Delphi method. The valid attributes are analyzed using fuzzy set theory and decision-making trial and evaluation together to handle the qualitative information and interrelationships among the attributes. This procedure converts qualitative information into numerical data to create a diagram showing the interrelationships among the attributes. This study found that persuasive communication is the most effective factor in convincing consumers to transition to sustainable consumption. Other key factors for this transition include educating consumers, augmenting their knowledge and altering their attitudes toward sustainable consumption. Being environmentally friendly, product labeling, offering an authenticity argument, and reusing and recycling products are the solutions found in this study.

Keywords: sustainable consumption transition; ecological modernization theory; transition management theory; persuasive communication; decision-making trial and evaluation laboratory

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1. Introduction

Sustainable consumption transition (SCT) is a process of transitioning from being unsustainable to being sustainable that involves a change in views, positions and tactics by consumers and regulatory authorities while simultaneously focusing on quality of life (Spaargaren et al., 2012; Lin et al., 2019; Tseng et al., 2020a;b). SCT is complex and remains a problem in the consumption process due to the nature of consumer behavior, which would ideally be environmentally friendly (Dong et al., 2020). Nevertheless, SCT is difficult to achieve: the need for a transition by reducing the negative impacts on the environment from the postconsumption waste of products has been highlighted. For instance, Notarnicola (2017) noted that consumption is showing an ongoing trend toward unsustainability due to a loss of focus on attention to consumer behavior. Prior studies have indicated that changing consumers' behaviors is key to fostering transitions toward sustainable consumption practices (Crivits and Paredis, 2013; O'Rourke and Lollo, 2015). However, changing consumers' behavior is not an easy task. For instance, Vega-Zamora et al. (2019) found that consumers have a lack of trust in and knowledge about sustainable products. To address this issue, some manufacturers have developed sustainable products and packaging, and the government has implemented environmental policies and regulations. Whether sustainable products and packaging reach consumers depends considerably on the process from buying the right products to governing their environmental consciousness. Hence, this study proposes a set of valid attributes to justify SCT.

This study focuses on attributes such as consumer behavior, environmental governance, and the role of persuasive communication (Wu et al., 2016; Janßen and Langen, 2017). For instance, Vittersø and Tangeland (2015) found that the main success attributes with the transition are related to consumers' perception about the sustainable benefits of their behavior, manufacturers' actions and the government's policy toward SCT. Ely et al. (2016) presented SCT as being related to societal activities through behavior, to manufacturers through their actions and to the government as regulators, where each stakeholder interacts with one another through the media and social networks. Interaction with respect to sustainable information among the involved stakeholders is significant for SCT improvement (Magnier and Schoormans, 2015; Lombardi et al., 2017). Vega-Zamora et al. (2019) stressed that the failure to deliver sustainable information has a negative impact on successful transitions. The transition process faces a barrier of the ineffective spread of information regarding the potential benefits, including financial benefits, from policy makers to consumers, which affects the confidence level consumers have in these products (Nikolaou and Kazantzidis, 2016; Mulcahy et al., 2020). Sustainable information and communication among stakeholders are important components of SCT failure or success.

Moreover, SCT attributes, such as firm operations, policy makers and consumers, could be the main solution to achieve SCT. SCT is an upstream and downstream process in terms of environmental governance in ecological modernization theory. Manufacturers are responsible for the upstream process, whereas consumers are involved in the downstream process (Spaargaren and van Koppen, 2009; Tseng et al., 2020a). In terms of perspectives, the niche level is for firm activities, the regime level is for government governance, and the landscape level for society is used to address the dynamics of the transition (Grin, 2012). Nevertheless, a key issue is located on the niche level. There are interrelationships among the

firm, industry and government activities. Environmental dynamics are difficult to solve by focusing on only current policies but must be addressed by restructuring the societal system, as explained by transition management theory (Vittersø and Tangeland, 2015). Indeed, the landscape level is related to consumers' information and confidence, and many people have never purchased sustainable food due to a lack of knowledge about its benefits. This study proposes persuasive communication from ecological modernization and transition management theories to address the barriers to achieving successful SCT at the landscape level.

In addition, Vittersø and Tangeland (2015) identified a need for consumer information and confidence in persuasive communication and suggested a reconstruction of the societal system to achieve SCT. Moreover, Vega-Zamora et al. (2019) noted that persuasive communication in SCT impacts consumers' level of knowledge about, confidence in, and trust in sustainable products. The considered attributes are taken from transition management theory and ecological modernization theory and include consumer behavior and upstream and downstream processes of environmental governance. Consumer behavior includes sustainable knowledge, confidence and attitude, and the downstream processes of environmental governance focus on consumers' decisions to buy, recycle and reuse products. In addition, information from external stakeholders affects consumer knowledge, confidence, attitudes and decisions to act.

The SCT attributes are judged in terms of consumer preferences, and the preferences provide a measure of qualitative information. Hence, this study proposes applying the fuzzy Delphi method (FDM) to obtain a set of valid attributes. Consumer preferences must be transformed into crisp values for comparison, and fuzzy set theory is proposed to transform linguistic preferences into crisp values. Moreover, complicated interrelationships exist among manufacturers, industries and government; hence, this study uses the decision-making trial and evaluation laboratory (DEMATEL) method to handle qualitative attributes and interrelationships and to investigate complex and intertwined groups (Fontela and Gabus, 1976; Tseng et al., 2017; Yeh et al., 2020). The DEMATEL method translates the causal interrelationships among the attributes into a visual interrelationship map; in addition, the improvement criteria are justified in practice. Hence, the objectives of this study to assess attributes are as follows:

- To develop a set of valid SCT attributes in terms of qualitative information.
- To identify the causal interrelationships among the attributes with linguistic preferences.
- To justify the practical improvement criteria under uncertainty.

This study contributes to both the theory and the industry of SCT. The contributions include (1) providing a set of valid SCT attributes, (2) addressing the causal interrelationships among the attributes, and (3) providing practical means of improvement for the packaged food and beverage industry in Indonesia. This study enables stakeholders to identify the causes of issues in the transition process and to eliminate problems to improve SCT.

This study is organized as follows. Section 1 discusses the gaps and study objectives. Section 2 reviews the literature on SCT, including theories and attributes. Section 3 explains the method and data analysis. Section 4 discusses the results and presents figures for the analyzed attributes. Section 5 presents the contributions of the study for both theory and practice. Finally, Section 6 presents a conclusion and the study's limitations.

2. Literature Review

This section reviews the theoretical perspectives on SCT, including the proposed method and measures.

2.1 Theoretical framework

Ecological modernization theory (EMT) offers governing processes for the environment, including upstream processes and downstream processes (Spaargaren and van Koppen, 2009). The upstream processes include the practices of manufacturers such as processing, storing, transporting, and distributing. Meanwhile, downstream processes include the activities performed by consumers, such as buying, reusing, and recycling. EMT is based on the assumption that the government, through its policies, provides solutions for problems in the environment, economy and society at large (Spaargaren et al., 2012; Lin et al., 2019). The problem with such an assumption is that the policies are not the best representation of reality in terms of the effectiveness of communicating these policies to the involved stakeholders and the understanding of consumer behavior. Moreover, Vittersø and Tangeland (2015) argued that there is a lack of direct correlation between the policies implemented by the manufacturers and consumers' motivation to consume products. Consumers need more motivation or encouragement than just policies in order to decide to act toward SCT.

Transition management theory (TMT) provides an explanation for the evolution of the economy, culture, technology, environment and institutions taking place at different levels (Rotmans and Loorbach, 2009). Grin (2012) categorizes the different levels as the niche level, regime level, and landscape level, which correspond to innovative practices by the firm or industry, structural changes by the regulatory authorities, and long-term consumer trends, respectively. Overall, the problem in SCT is often at the landscape level, where there is a failure of the societal system that cannot be solved simply by the reinforcement of policies (Vittersø and Tangeland, 2015; Yeh et al., 2020). Specifically, the problem at the landscape level is with consumer behavior, including using products in an environmentally friendly way (Dong et al., 2020). The role of the consumers in the transition process is ineffective and unsuccessfully implemented at the landscape level due to the manufacturers' policies and the government. To fill these gaps, this study integrates these theories into SCT. This study assesses the transitional gap, which is the imbalance between what manufacturers want and how consumers act, which depends on the policies and activities of manufacturers to provide and facilitate sustainable products for consumers.

2.2 Sustainable consumption transition

SCT is a complex process of transitioning from unsustainable consumption to sustainable consumption to ensure environmental friendliness while maintaining and enhancing the quality of life for future generations (Ahamad and Ariffin, 2018; Tseng et al., 2020b). Traditionally, sustainable consumption is the fulfillment of basic human needs through the use of goods and services without harming the environment with waste and pollution (Oslo Symposium, 1994). Spaargaren et al. (2012) described SCT as a process of medium- to long-term change that has effects on the rules of consumption and production. SCT is a time-consuming process of improving sustainable consumption and production that involves different groups of stakeholders. Grabs et al. (2016) noted that the stakeholders involved in the processes range from manufacturers and providers to consumers, with the government providing infrastructure. Prior studies found a growing role of policies that are consumer-oriented and a role of consumers themselves in the success of SCT, despite the

complexities related to implementing these policies (de Koning et al., 2016; Echegaray, 2016; Wu et al., 2016).

Watkins et al. (2016) linked SCT to the importance of emphasizing the building of a moral foundation among consumers because it is proven to affect their orientation and desire for change, especially in regard to sustainable consumption. Li et al. (2016) suggested that the instruments of transition include the policies, governance, infrastructure, and business models of manufacturers and consumer motivation. However, policies alone are not the key to achieving SCT (Vittersø and Tangeland, 2015; Tseng et al., 2020b). The role of consumers is significant, especially in the process of making consumption decisions. Joerß et al. (2017) defined sustainably consuming consumers as those who make consumption and purchase decisions based on these decisions' benefits for and harm to the environment. Additionally, Quoquab and Mohammad (2017) noted that sustainable consumers take short-term and long-term consequences into consideration when deciding what to consume or what to purchase. SCT involves not a single stakeholder but a collaboration among many stakeholders, including the government through relevant programs, manufacturers through their sense of responsibility from their activities, and consumers (Ely et al., 2016; Tseng et al., 2020a).

Although SCT is complex, the main stakeholders are consumers, manufacturers, and the government. Vainio et al. (2020) noted that consumers are the key to the success of SCT. Moreover, the future considerations of each consumer affect the transition. The role of consumers in the transition is through their sustainable awareness and behavior in consumption (Echegaray, 2016; Li et al., 2016; Tseng et al., 2019). Spaargaren and van Koppen (2009) found that the environmental governance by manufacturers in attempting to change practices toward SCT includes storage, transportation, and distribution activities. Vittersø and Tangeland (2015) emphasized that the role of the government is significant in terms of providing policies or regulations related to SCT, although policies or regulations alone are not sufficient. Nikolaou and Kazantzidis (2016) found that insufficient communication about sustainable information causes the failure of SCT due to insufficient knowledge. Annunziata et al. (2019) noted that the communication of sustainable information by manufacturers has a positive impact on SCT because it augments consumers' knowledge. Moreover, low confidence and trust are caused by insufficient knowledge due to ineffective communication or inadequate interaction between manufacturers and the government (Gadema and Oglethorpe, 2011; Hartikainen et al., 2014; Vega-Zamora et al., 2019).

In sum, SCT has problems with respect to consumer communication. Inadequately communicated information causes the transition to be unsuccessful due to consumers' misunderstanding of their potential role in sustainable consumption. This study enriches the literature on SCT by exploring EMT and TMT and persuasive communication.

2.3 Proposed measures

This study considers TMT and EMT. Despite the adequacy of these two theories to cover the discussion of SCT, there is room for enhancement by adding additional attributes from other theories. This study emphasizes attributes that include 4 aspects and 14 criteria. The aspects consist of consumer behavior (A1), upstream processes of environmental governance (A2), downstream processes of environmental governance (A3), and persuasive communication (A4), as shown in Table 1.

Consumer confidence (C1) in the claims about a product shows differences with respect to determination. Consumers with a lack of confidence have different consumption patterns than those with a high level of confidence in a sustainable product (Vermeir and

Verbeke, 2008). Consumer behavior toward SCT includes being efficient in the use of resources (C2) and having the attitude that being environmentally friendly (C3) helps to achieve SCT (Wu et al., 2016). Finally, consumer behavior involves consumers' dependence on the traditional market (C4) with reduced packaging use, which leads to a reduction in packaging waste (Zhang et al., 2016). Products in traditional markets are sold without manufactured packaging.

Upstream processes in environmental governance consist of manufacturers' activities. Manufacturers create a product with a certain design (C5) that sends a sustainable message to consumers. Contextually, the design includes the use of leftover material from production instead of postconsumer waste (Ordonez and Rahe, 2013; Singh and Ordonez, 2016). Moreover, Tseng (2017) suggested that the sustainable design of a product potentially reduces its negative impacts on the environment. Another attribute is the material of the product packaging (C6), which focuses on the packaging and is not necessarily based on leftover material but can be any sustainable material that affects the perception of the SCT (Boesen et al., 2019; Steenis et al., 2019). For instance, product labeling (C7) is a major tool for communicating the performance of products (Janßen and Langen, 2017; Zhao et al., 2018). Pancer et al. (2015) found that product labels including verbal and nonverbal features are effective communication tools.

In contrast, downstream processes are activities performed by consumers in terms of environmental governance. Product buying (C8) is influenced by the consumer's level of information about the product and trust in the product (de Koning et al., 2016). In general, a consumer's product purchase decision is personal and related to the consumer's level of knowledge about SCT. After making a purchase, the product is reused or recycled. Product reuse (C9) and product recycling (C10) are activities related to the governance of the environment from the individual perspective of each consumer, who must be educated about how to reuse and recycle used packaging or leftover products (Spaargaren and van Koppen, 2009; Spaargaren, 2016).

Sustainability information must be communicated among stakeholders and is vital to achieving SCT because it affects consumers' confidence and trust in the product or firm (Magnier and Schoormans, 2015; Lombardi et al., 2017; Tseng et al., 2019). A health argument (C11) is a statement or information from health experts about the health benefits of a product (Lopez-Azpiazu et al., 2001; Vega-Zamora, 2019). Additionally, authenticity arguments (C12) are transmitted by a union or association of manufacturers or the industry (Vega-Zamora, 2019). Janssen and Hamm (2012) explained that when manufacturers provide clear information about their product through a union or association, more trust is generated among consumers. Another source of communication is elites (C13). An elitist argument is a statement by or information from a well-trusted practitioner or expert in the industry, for example, a famous chef (Vega-Zamora, 2019). Finally, social arguments (C14) are transmitted by a public authority (Vega-Zamora, 2019; Tseng et al., 2020b), such as a government agency that has the authority to issue regulations.

In conclusion, SCT is explained by several attributes, and prior studies have used different sets of attributes to explain SCT. To achieve the objectives of this study, a new set of attributes is proposed by combining EMT and TMT and including additional attributes.

(INSERT TABLE 1 here)

3. Method

3.1 Industrial background

In general, one of the direct effects of unsustainable consumption is the production of waste. In Indonesia, 64 million tons of waste are produced annually; 60% is biodegradable organic waste, 14% are plastics, and 9% is paper (Jain, 2017). Purwaningrum (2016) found that food and beverage packaging contributes to 30.19% of nonbiodegradable waste in Indonesia. Packaging consumption has outnumbered other types of consumption, including electronics, automotive and building (Hidayat et al., 2019). More specifically, packaged food and beverages in Indonesia have contributed substantial amounts of waste to landfills in the past three years. During the 2016-2019 period, fast-moving consumer goods manufacturers in the food and beverage industry contributed 75% of all waste to landfills, becoming the main contributor (Greenpeace Indonesia, 2019). This indicates a failure of SCT because the volume of waste did not decrease. The problem with the transition is related to manufacturers and consumers. Despite the communication efforts by manufacturers via sustainability labeling, consumers are still not well informed about what to do with waste. The SCT indicates a problem in the disconnectedness between the sustainable messages that the manufacturers want to deliver and the information consumers receive, perceive and react to. Manufacturers fail to create accurate perceptions among consumers during the transition process. Consequently, consumers do not have the knowledge, attitude and behavior that the manufacturers may expect based on their communication through labeling.

Stakeholders at different levels, including the niche and regime levels, have developed sustainable policies and infrastructure but often fail to communicate information to consumers. This transitional gap, where consumers respond to sustainable products by behaving unsustainably, is located at the landscape level. For instance, consumers are not well informed about and skilled in determining which products are sustainable to purchase and what is done to give waste another life through reuse and recycling. Achieving SCT affirms the stakeholders' roles. However, this study highlights the importance of effectively communicating information about SCT to consumers. Persuasive communication from industry experts, including health, authenticity, elitist and social perspectives, is considered to be an attribute. This style of communication is unbiased toward a specific firm or brand; therefore, it is believed to be more persuasive. This attribute is considered as a communication strategy by the different levels of stakeholders involved in the transition process.

3.2 Analytical method

1. Delphi method

The Delphi method was applied to validate the SCT attributes. This study involved 13 experts with profiles ranging from CEOs of food manufacturers to managers in the retail industry. The experts evaluated the attributes' importance levels using a five-point Likert scale. The Delphi procedure involved the following steps: (1) gathering experts' evaluation scores for the level of importance of each criterion using a Likert scale and calculating the central tendency and standard deviation of the responses for each criterion; (2) checking if expert consensus is reached for each criterion by fulfilling the consensus threshold given in Table 2; and (3) revising the attributes according to the consensus level, considering the experts' comments, and deleting unaccepted attributes (Tseng et al., 2019).

2. Fuzzy DEMATEL

This study applied fuzzy set theory to collect linguistic preferences and transform them into triangular fuzzy numbers (TFNs), as shown in Table 2. The normalization, aggregation, and defuzzification were conducted by means of the following equations.

(INSERT TABLE 2 here)

The decision matrix assumes that there are *x* attributes to be assessed against y attributes. n is the number of decision makers; therefore, the decision-maker vector is denoted by $\widetilde{D}_n$ using linguistic preferences represented as $(g\tilde{d}_L^n, g\tilde{d}_M^n, g\tilde{d}_U^n)$ (Lan et al., 2019; Tseng et al., 2019; Tseng et al., 2020a)

$$\widetilde{D}_n = \begin{bmatrix} \tilde{d}_{L1j}^{1y}, \tilde{d}_{M1j}^{1y}, \tilde{d}_{L1j}^{1y} & \cdots & \tilde{d}_{Li1}^{1y}, \tilde{d}_{Mij}^{1y}, \tilde{d}_{Lij}^{1y} \\ \vdots & \ddots & \vdots \\ \tilde{d}_{L1j}^{x1}, \tilde{d}_{M1j}^{x1}, \tilde{d}_{L1j}^{x1} & \cdots & \tilde{d}_{Lij}^{xy}, \tilde{d}_{Mij}^{xy}, \tilde{d}_{Lij}^{xy} \end{bmatrix}_{xy}, \text{n=1,2,....,n} \quad (1)$$

The fuzzy numbers are then normalized. If a decision group comprises n members, let $\tilde{d}_{ij}^n$ represent the fuzzy weight of the effects of the *i*th attribute on the *j*th attribute as assessed by n decision makers.

$$D = \left(g\tilde{d}_{Lij}^n, g\tilde{d}_{Mij}^n, g\tilde{d}_{Lij}^n\right) =$$
$$\left[\left(\tilde{d}_{Lij}^n - min\tilde{d}_{Lij}^n\right)/\left(max\tilde{d}_{Lij}^n - min\tilde{d}_{Lij}^n\right), \left(\tilde{d}_{Mij}^n - min\tilde{d}_{Mij}^n\right)/\left(max\tilde{d}_{Mij}^n - min\tilde{d}_{Mij}^n\right), \left(\tilde{d}_{Uij}^n - min\tilde{d}_{Uij}^n\right)/\left(max\tilde{d}_{Uij}^n - min\tilde{d}_{Uij}^n\right)\right] \quad (2)$$

where $(g\tilde{d}_{Lij}^n, g\tilde{d}_{Mij}^n, g\tilde{d}_{Uij}^n)$ is represented as a triangular fuzzy number with normalized values.

The left and right normalized values acquired by Equation (2), the total normalized crisp values using Equation (3), and crisp values applied Equation (4) are then computed.

$$\left(D\tilde{d}_{LTij}^n, D\tilde{d}_{RTij}^n\right) = \left[g\tilde{d}_{Mij}^n/\left(1 + g\tilde{d}_{Mij}^n - g\tilde{d}_{Lij}^n\right),\ g\tilde{d}_{Uij}^n/\left(1 + g\tilde{d}_{Uij}^n - g\tilde{d}_{Mij}^n\right)\right] \quad (3)$$

$$D\tilde{d}_{ij}^n = \left[\frac{\left(D\tilde{d}_{LTij}^n\left(1 - /D\tilde{d}_{LTij}^n\right) + \left(D\tilde{d}_{RTij}^n\right)^2\right)}{\left(1 - D\tilde{d}_{LTij}^n + D\tilde{d}_{RTij}^n\right)}\right] \quad (4)$$

$$d\widetilde{w}_{ij}^n = min\ g\tilde{d}_{Lij}^n + D\tilde{d}_{ij}^n\left(max\ g\tilde{d}_{Uij}^n - ming\tilde{d}_{Lij}^n\right) \quad (5)$$

An initial direct relation matrix (IDRM) is defined to aggregate the subjective judgments of n evaluators; the synthetic value is obtained using Equation (5). In IDRM, w_{ij} denotes the degree to which criterion i affects criterion j.

$$w_{ij}^n = \left(\widetilde{w}_{ij}^1 + \widetilde{w}_{ij}^2 + \widetilde{w}_{ij}^3 \ldots . + \widetilde{w}_{ij}^n\right)/n \quad (6)$$

The IDRM is standardized to generate the normalized direct relationship matrix (NDM).

$$\mathrm{NDM} = \mathrm{s} * \mathrm{IDRM} \quad (7)$$

where $\mathrm{s} = \max\left(\sum_{j=1}^n w_{ij}^n\right)$ *f*or all i from 1 to n.

After obtaining the total relation matrix, NDM is used to calculate the total interrelationship matrix Y.

$$\mathrm{TM} = \mathrm{NDM}(\mathrm{I} - \mathrm{NDM})^{-1}$$

(8)

where I is an identity matrix.

A causal diagram is then drawn: the sum of rows is denoted by vector α, and vector β represents the sum of columns. The horizontal axis ($\alpha+\beta$) is "prominence" and represents the importance. The vertical axis ($\alpha-\beta$) is "relation" and denotes the causal attributes. When the value of ($\alpha-\beta$) is negative, the aspect or criterion is in the effect group, and when the sum of ($\alpha-\beta$) is positive, it falls into the cause group.

$\alpha = \sum_{j=1}^{n} NDM_{ij}$, for all j from 1 to n (9)

$\beta = \sum_{j=1}^{n} NDM_{ij}$, for all i from 1 to n (10)

3.3 Analytical steps

This study implements five analytical steps.

1. Applying the Delphi method to remove the less important SCT attributes.
2. The Fuzzy DEMATEL survey instrument was used to collect the experts' linguistic preferences with qualitative information using Equation (1).
3. Converting linguistic preferences into TFNs according to Equation (2) and transforming the TFNs into crisp values via Equations (3)-(5).
4. The crisp values are integrated into a relationship matrix using Equation (6).
5. Mapping the cause-effect relationship diagram via Equations (7)-(10).

4. Results

1. The Delphi method is used to remove the less important attributes. The valid attributes are presented in Table 1.

2. The respondents follow $\widetilde{D}_n$ to compose the matrix for the linguistic preferences of each respondent. The linguistic preference is taken from Table 3 with the scale ranging from VLI for very low influence to VHI for very high influence.
   (INSERT TABLE 3 here)

3. Converting linguistic preferences into TFNs
   The linguistic preference is referred from Table 2 using TFNs ($g\tilde{d}_L^n, g\tilde{d}_M^n, g\tilde{d}_U^n$) to transform the results in matrix D. The TFNs are converted into crisp values (w_{ij}^n) using Equations (2)-(5). Table 4 presents the computational process.
   (INSERT TABLE 4 here)

4. The n respondents are integrated via weights into the IDRM using Equation (6).
   Table 5 presents the TFNs transformed into crisp values. All the $d\widetilde{w}_{ij}^n$ crisp values from the respondents are integrated and averaged into the IDRM.
   (INSERT TABLE 5 here)

5. The IDRM is standardized to the NDM using Equation (7), and the NDM is used to obtain the TM via Equation (8).
   (INSERT TABLE 6 here)

Table 6 presents the TM. The horizontal axis ($\alpha+\beta$) is "prominence", and the vertical axis ($\alpha-\beta$) is "relation". The cause-effect diagram of the aspects is drawn based on ($\alpha+\beta$) and ($\alpha-\beta$) using Equations (9) and (10).

This analytical step is repeated. Table 7 presents the IDRM obtained from integrating the crisp values.

(INSERT TABLE 7 here)

Table 8 is the TM used to add the raw values into α and sum the column values into β.

(INSERT TABLE 8 here)

Figure 1 shows that the aspects of upstream environmental processes (A2) and persuasive communication (A4) belong to the cause group, whereas consumer behavior (A1) and environmental processes (A3) fall into the effect group. The relationships among the aspects are shown in Figure 1. A2 has a medium effect on A1 and A3. Meanwhile, A4 has strong effects on A1 and A3, indicating that A4 is an important aspect to focus on. The results show that A1 and A3 do not affect A2 and A4. However, A1 shows a strong effect toward A3, whereas A3 to A1 does not have a strong effect.

(INSERT Figure 1 here)

Figure 2 shows that the main criteria for providing SCT solutions lie within the cause group, including health arguments (C11), authenticity arguments (C12), elitist arguments (C13), product recycling (C10), product reuse (C9), product labeling (C7), and environmentally friendly attitudes (C3). These criteria are important for the industry in terms of solutions for sustainable food consumption transition.

(INSERT Figure 2 here)

5. Implications

5.1 Theoretical implications

The cause aspects are persuasive communication (A4) and upstream processes of environmental governance (A2). SCT has problems communicating what the manufacturers want to achieve with their sustainable products with how consumers react to them. This disconnect causes an unsuccessful transition due to nonenvironmentally friendly behavior by consumers. Communication is vital and must be done by the appropriate group of stakeholders. In addition to communication, the behavior of the manufacturers in governing the environment also plays a role in achieving SCT. Providing sustainable products and information are the basic responsibilities to sustain the transition process.

Prior studies highlighted the importance of communication, where the role of persuasive communication involves building awareness and increasing knowledge by stressing who delivers the message (Annunziata et al., 2019; Vega-Zamora et al., 2019). Unsuccessful communication results in insufficient information or knowledge about SCT received by consumers, which affects behavior. Consumer behavior is the main indicator of the effectiveness of communication. Well-communicated information enhances SCT knowledge (Nikolaou and Kazantzidis, 2016). Persuasive communication has a strong effect on how consumers govern their environment and behave sustainably. Persuasiveness is achieved through the right choice of communicator, that is, who delivers the information. In regard to choosing the communicator, it is not about sending the person who has the main position in the firm or institution to the front but selecting the best person to deliver the information. The level of awareness and knowledge is effectively increased through the right choice of communicator. Increased knowledge correlates with sustainable consumer behavior.

Upstream processes of environmental governance affect the downstream processes and sustainable behavior of consumers. Contextually, the upstream processes include activities by the firm, such as designing products, using sustainable material for packaging, and labeling, in an attempt to reduce the negative environmental impact (Spaargaren and van Koppen, 2009). Manufacturers have the responsibility to ensure that products are sustainably processed in terms of production and marketing in order to convince consumers. The sustainable activities by the manufacturers, especially in the production and marketing processes of products, affect how consumers govern their environment and behave sustainably, which begins from the purchasing decision and ends at reusing or recycling waste in the postconsumption stage. High awareness among consumers is key to the success of SCT (Echegaray, 2016; Li et al., 2016; Dong et al., 2020). For instance, the effects of higher awareness and better knowledge on consumer attitudes and behavior improve SCT by reducing waste production and making littered waste safer for the environment.

5.2 Industrial implications

This study provides practical solutions for the food and beverage industry in Indonesia to improve the process of achieving SCT. *Environmentally friendly attitude* (C3) plays a role in achieving SCT in terms of how consumers in general act sustainably in all their activities, not only when consuming products but also managing waste in the postconsumption stage and taking care of the environment around them. Manufacturers should focus their sustainability programs on how to change consumers' attitudes because sustainable policies and products alone are not sufficient to achieve SCT if consumers do not maintain an environmentally friendly attitude. For instance, social marketing programs should be effective because they involve direct and physical participation by consumers, even though such programs may take a long time and involve considerable effort. The effect of such an approach is persistent in the memory of the participants because they have been personally in touch with the activities. By means of a combination of physical activities with the consumers or community and advertising campaigns, manufacturers should eventually be able to change consumer attitudes toward being more environmentally friendly.

Product labeling (C7) is a proactive action by manufacturers to improve SCT by informing consumers about the products that they choose to consume. Consumers' understanding of what they consume plays a role in the transition process. For instance, a product that does not come with sustainability labeling may cause consumers to act unsustainably due to a lack of information about the product. The information on the packaging helps consumers to know what they are about to buy or use and whether their decision to consume the product has a positive or negative impact on the environment. Moreover, a niche community of consumers chooses to buy and use only the products that are the least harmful to the environment. This group represents an opportunity for manufacturers to take action to educate consumers while simultaneously appearing to be responsible for the environment. Sustainability labeling is presented in the form of either verbal or nonverbal information. The former includes a textual description, while the latter includes logos, images, and use of color associated with sustainability. Such labeling must be easy to read and to understand.

Authenticity arguments (C12) increase consumers' trust in sustainable products. An authenticity argument is a statement from an association or union representing the industry. This type of argument is used as part of a communication strategy to convince consumers about SCT. The choice of communicator should be based on the expected effect of the

communication process. An association or union of an industry or manufacturers is an effective means of persuading consumers because it is not biased toward a specific firm, brand or product but rather focuses on the whole industry. In other words, the argument is not attached to promoting a specific firm but to responding to an issue affecting the entire industry. Such an unbiased argument is persuasive because it is free from commercial purposes or causes. If a firm publicly communicates about its sustainable products, it will be considered an advertisement or biased promotion, which is unlikely to occur when an association or union that represents the industry does the communication.

Product reuse (C9) is a downstream process of governing the environment by consumers. Reusing a product after consumption means not having to perform any kind of treatment to transform the product, in contrast to product recycling. Thus, consumers' product reuse appears to be more sustainable than recycling because it indicates that consumers understand the effect of not producing waste. Less waste goes unused; thus, less harm is done to the environment. The problem in industry is that considerable waste has been produced and left unused. Stakeholders, including manufacturers, government and communities concerned about social and environmental issues, must take actions to encourage consumers who do not yet know how to properly handle their waste. Product reuse can also be encouraged through participatory programs initiated by manufacturers. For instance, a product that has been used by a consumer is returned to the firm via a special box placed in a public space or returned directly to the store, and in exchange, a reward is given. SCT is more effective because the used product does not go to waste but is reused for either refilling or other purposes.

Product recycling (C10) is initiated by consumers. Recycling a product is relatively less sustainable than reusing one since it requires more energy and resources to transform the product into a raw material for future use. One indicator of success is low waste production. By means of product recycling, waste is reduced, and the use of first-use raw material is suppressed. However, consumers' acquisition of the knowledge and skills required to participate in recycling may represent their own problem, although product recycling contributes to SCT. Relevant stakeholders should play active roles. For instance, social marketing programs should be initiated by manufacturers in collaboration with the government and environment-focused community. A series of workshops could be implemented to change how consumers interact with waste in their daily lives. Some communities in Indonesia have set a working example by collectively recycling plastic packaging into useful and commercial items, such as shopping bags and purses. This phase of transition works even better when the recycled products are valuable and thus benefit the community through sales profits.

Five solutions are presented to solve the problems often found in SCT. Manufacturers in the packaged food and beverage industry should consider these solutions as part of their long-term sustainability strategy. Achieving a successful SCT is not the responsibility of a single stakeholder but of all stakeholders. Consumers play a role in the transition process because there is a continuation of sustainable vision delivery from upstream to downstream. The successful implementation of this set of solutions should eliminate the problems related to SCT, especially in the packaged food and beverage industry in Indonesia.

6. Conclusions

The transition from unsustainable consumption to sustainable consumption is the focal point of SCT. Problems in achieving a successful transition are found not only at the niche and

regime levels but also often at the landscape level. To explore the transition process and find solutions to these problems, this study assesses a set of attributes that include consumer behavior, upstream and downstream processes of environmental governance, and persuasive communication. From a theoretical perspective, EMT and TMT are used to solve problems found in the transition process. In return, the findings of this study contribute to theory and practice in the form of knowledge and practical suggestions. The DEMATEL method is used to determine the interrelationships among the attributes. This method is used because it enables qualitative information to be assessed by transforming it into quantitative data. The qualitative information is obtained from experts. The interrelationships of the attributes represent the contribution of this study to the theory and practice focused on determining and finding solutions to SCT, especially in Indonesia.

Manufacturers are responsible not only for producing sustainable products but also for educating consumers to be environmentally friendly, which has long-lasting effects on SCT. Manufacturers inform consumers via product sustainability labeling to augment consumers' awareness of the sustainability of the products they buy and consume. Another way to educate consumers about SCT is through authenticity arguments, which are not solely the responsibility of the firm but rather that of an association or union of the industry. This approach to communication is considered persuasive because it is unbiased to a certain firm or brand, in contrast to advertisements or advertorials. Consumers can perform product reuse and product recycling to reduce waste. Manufacturers, government and social organizations are responsible for educating consumers about these strategies. Regular workshops should be conducted. Recycling is relatively less responsible than reusing due to the use of energy and resources to transform the waste back into raw materials. If strategically implemented, this set of solutions should improve the SCT in the food and beverage industry in Indonesia.

The interrelationships of the aspects in this study enrich SCT from a theoretical perspective. These aspects include persuasive communication, upstream and downstream processes in governing the environment, and consumer behavior. Problems with SCT are related to how consumers do not behave sustainably in their consumption. This study found that persuasive communication, especially from a union or association of manufacturers or industry, improves consumer behavior and governance of the environment. Arguments from experts other than manufacturers are also persuasive to educate or convince consumers about the importance of being sustainable. The upstream processes of environmental governance also impact the affected aspects. For instance, manufacturers should improve the sustainability labeling of packaging. Labels are sometimes either unnoticeable or difficult to understand by consumers with low knowledge of the differences in sustainability labels and logos. The use of sustainable terms or designs should also consider consumers' ease of understanding. When consumers find it easy to understand sustainable information on a product, SCT improves.

The limitations of this study include the number of attributes, the scope of industry, and the number of respondents included. The number of aspects is limited to five, and there are fourteen criteria. This study considered 13 experts in the packaged food and beverage industry in Indonesia; therefore, the results may not be generalizable to other industries and countries. Future studies may consider a larger number of attributes to obtain more detailed interrelationships among the aspects and a set of main criteria. Future studies may involve more experts from the industry. Future studies exploring SCT should enrich the theory and provide better solutions to the problems in the industry.

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