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CONSUMER RELATED THEORIES AND THE RIGHT TO INFORMED CHOICE FOR CONSUMER IN NANO FOOD CONSUMPTION

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ABSTRACT

The use of nanomaterials in food-by-food producers has increased in today's modern society. Food that contains nanomaterials is known as nano food, which is associated with both benefits and risks. Due to the uncertainty of its risks, it is important to accord consumers with the right to informed choice in the context of nano food consumption. In the absence of this right in the existing food legislation in Malaysia, this paper aims to examine the underlying principles from the perspective of consumer-related theories to provide theoretical justification in reforming the present food legislation. This paper presents how the identified consume-related theories can be applied to explain the

need for such rights in Malaysian legislation. Three consumer-related theories, which are the Theory of Planned Behaviour, Consumerism Theory, and Postmodernism Theory, are analysed through a doctrinal approach and via theory analysis. Deductive inferences were made to establish the rationale for the need to have the right of informed choice available to consumers in the context of nano food consumption. The examination of the theories evidently shows that the right to informed choice can be exercised through labelling requirements for nano food. This paper contributes significantly to the existing body of knowledge as it highlights the need for the right to informed choice for consumers in nano food consumption, and emphasises the identification of consumer-related theories to support legislative reform so as to include the right. This paper suggests the use of labelling as a way of according the right to informed choice to consumers in nano food consumption.

Keywords: Consumer-related theories, right to informed choice, nano food, theoretical justification, labelling.

INTRODUCTION

According to the Organization of Economic Cooperation Development (OECD), nanotechnology is defined as a set of mechanics that is affiliated with the study of physical matter which allows a person to wield the structure and state of any objects in nano size. In addition to medicine, health care, environmental remediation and energy, nanotechnology has also been applied in the food industry. The existence of nanomaterials in food production is known as ‘nano food’. Nano food has been in the food processing circle for decades, and it naturally exists at the nanoscale. Studies portray that the application of nanotechnology in food comes with advantages such as an increase in the quality of food in the food industry, promote health additives, longer shelf-lives and varieties of new flavors (Chaudhry, 2008; Chellaram, 2014; Singh et al., 2017). However, there are also risks to consuming nano food which may jeopardize human health. For example, the application of nanoparticles in nano food can cause toxicity due to the manipulation of molecules during food processing (Chaudry, 2008; Clements, 2017). Unfortunately, these risks have not yet reached the consumers’ and legislature’s attention.

The development of nano food has witnessed many countries begin to refine and develop their regulatory framework (Chaudhry, 2008). For the general public's safety, nano food derived from food ingredients, food contact materials and food additives need to be reported and informed to the public to avoid any potential implications (Silbergeld et al., 2011). Hence, an efficient policy is needed to ensure the consumer has access to their right to informed choice on the usage of nanomaterials in food.

At present, the legislative framework in Malaysia does not allow consumers to assess the risks or benefits of purchasing and consuming nano food due to there being no legal obligation on the food producer to label the presence of nanomaterials in the food produced. The Food Act 1983 and the Food Regulations 1985 are the two main sources of legislation governing food safety practices, and are grounded on risk-based and evidence-based regulatory approach. This approach excludes the governance of engineered nanomaterials used in nano food due to uncertainty and lack of scientific evidence on the risk posed by nanomaterials in food products (Jain & Ranjan, 2018). Section 13 of the Food Act 1983 prohibits the preparation and selling of any food that is considered to be injurious to health. However, the prohibition does not extend to possible health risks posed by novel food, which includes nano food. In addition, the offence of false labelling prescribed under Part III of the Food Act 1983 does not cover nano food. Under the Food Regulations 1985, the compulsory declaration on the presence of certain ingredients does not include the usage of nanotechnology. Due to the absence of this compulsory declaration on nano-engineered material used in food products, the Regulations itself is implicit in providing an opportunity for the food producer to conceal nano-engineered material under the pretence of common ingredients.

The loopholes in the Food Act 1983 and the Food Regulations 1985 in dealing with nano food allow food producers to produce and market nano food without having the obligation to label the existence of nano materials and related information in their products. In the absence of a legal and statutory duty to label the presence of nano materials in the food produced, the consumer is denied the right to information, thus depriving consumers of the right to make an informed choice in regard to nano food consumption.

According to Jepson (2005), in order to ensure consumers are neither deceived nor forced, an informed choice must gain traction to support people's autonomy. This will result in situations where an individual would feel more confident in their decision. In order to achieve this, fair information about the consequence of making a particular choice, and useful, high quality and sufficient information must be provided to the individual. In this context, the right to choose is highly relevant in the consumer protection and food law settings, and it can be exercised with adequate information of the products. Every consumer needs safe food, and there exists a fear of risk and harm in nano food (Sozer, 2009). The food information guideline deals with two main consumer interests; the right to information and freedom of choice, in which these interests assimilate into one protective standard called informed choice (Edinger, 2016). Allowing consumers to make an informed choice is pertinent to the wellbeing of consumers, and also for high impact competition in the market (Kampus, 2017).

The generic and ordinary principle of food law is to accommodate the need for consumers to make informed choices about the food they consume, and to prevent any practices that could mislead the consumer. Consumers have a positive unequivocal right to be provided with safe food products (Beekman, 2008). Jepson (2015) also emphasized that the right to informed choice is about making sure the rightful choices are made available to people, and that the choice is autonomous and free from coercion. With the advancement of food production nanotechnology, consumers have the right to be supplied with relevant up-to-date information to guarantee safe food consumption by the food producer.

Information relating to a food product must be made accessible to the consumer through a label, other accompanying material, or any other means (Kampus, 2017). If the consumers have a right to be provided with safe food products and the right to make an informed choice, food producers will have an unconditional undertaking to provide safe food products. This undertaking is only qualified by a non-moral clause that what counts as safe is always dependent upon available knowledge. To ensure both rights are secured and adhered to, it will be the duty of regulators to observe the safety of food products by developing and enforcing food traceability regulations for risk assessment and risk management (Beekman, 2008).

In Malaysia, in a survey conducted by Ramita Abdul Rahim, et. al. (2015) with the objective of, among others, investigating the knowledge and awareness of risks and benefits of nanotechnology amongst students, it was found that 38 percent of the respondents felt concerned about nanotechnology, followed by alarmed (21%), excited (18%), hopeful (12%) and no feeling (11%). This result shows that the majority of students felt that nanotechnology had risk issues such as side effects and safety. These results were further endorsed by another research conducted in 2017 by Karim et. al. (2017), where 85 percent of the respondents did not have competent and sufficient awareness on nanotechnology, despite them using nano-enhanced products available in the Malaysian market.

Due to the exclusion of governance of nano food in the domestic legislation and labelling framework, this paper posits that consumers must be accorded with a right to informed choice in nano food consumption, and that this right can be accorded through legislative reform. As such, the objective of this paper is to examine the underlying principles from the perspective of the relevant consumer-related theories affiliated with consumer protection, intending to provide theoretical justification in reforming the present food legislative framework. This is to support the need for the right to an informed choice for consumers in nano food consumption. This paper intends to analyse how the identified consumer-related theories can be applied to explain the need for such right in the Malaysian legislative framework.

For the purpose of answering the question above, three relevant consumer related theories, namely the Theory of Planned Behaviour, Consumerism Theory, and Postmodernism Theory are discussed. The discussion will assist this paper to understand and make a correct hypothesis in validating the need for the right to an informed choice for consumers in nano food product consumption.

METHODOLOGY

The research design for this paper is a doctrinal study as it attempts to examine the consumer-related theories in providing theoretical justification to accord the right to informed choice to consumers in nano food consumption. The theories are analysed to answer the

research question raised earlier, i.e. how the identified consumer-related theories can be applied to explain the need for the consumer's right to informed choice in nano food consumption in the Malaysian legislative framework. Deductive inferences were made from the identified theories to establish theoretical justification on the need for the said right. Framing a theoretical framework and justification is an important step to rationalise the need for a legislative reform. By analysing the related theories and their underlying principles, it sets out the various expectations that a theory posits and how it would apply to the specific cases under analysis (Abend, 2008; Grant & Osanloo, 2015).

As this paper is purely doctrinal and theoretical, the research strategy is mainly based on library research, focusing on a reading and analysis of the relevant consumer related theories and published materials such as journal articles, textbooks and reports on nano food and consumer rights.

The following section will canvas the underlying principles and rationale offered by the relevant consumer-related theories, i.e., the Theory of Planned Behaviour, Consumerism Theory and Postmodernism Theory to rationalise such need to accord the right of informed choice to consumers in nano food product consumption.

DISCUSSION

Theory of Planned Behaviour

The Theory of Planned Behaviour is a psychological theory to give clarification and prediction of human conduct dependent on a specific context (Ajzen, 1985, 1991, 2015). This theory is proposed by Ajzen as an extension of the Theory of Reasoned Action, which he developed with Martin Fishbein in 1975. According to Ajzen (1985), the Theory of Planned Behaviour is different from the Theory of Reasoned Action as the latter argues that an act or specific conduct originates from the volitional control of an individual. The will of an individual plays an important role in making decisions for him or herself. In contrast, the Theory of Planned Behaviour perceives that some decision-making acts are not only influenced by actual control, but also by

the perceived control of an individual. Ajzen thus incorporates the thought of the non-volitional control of an activity to foresee one's conduct in making a decision. He developed this theory after realizing that some behaviour is not completely under the control of the people as people's intentions can change or the performance of behaviour is met with failure. This realization is true as in certain situations, for one to perform an act; the performance of that particular act may require certain knowledge, skills, or cooperation with other people. In some cases, it requires a person to have money, time or resources (Ajzen, 2020).

According to Ferencz-kaddari and Shifman (2016), the theory of planned behaviour emphasises on the connection between an intention and a specific conduct. The probability of a conduct is reliant on the more prominent intention controlled by an individual to play out that specific conduct. In predicting one's action, this theory takes into consideration the intention of an individual because it can be symbolized as the degree of readiness to attempt to realize the behaviour (Kan et al., 2017). Tornikoski et al. (2019), moots that based on the Theory of Planned Behaviour, the intention which serves as the precursor to a certain behaviour is determined by three factors, which are behavioural attitude, subjective norm, and perceived behavioural control. These three factors act as the independent dynamic that could influence the intention in the Theory of Planned Behaviour framework. In a special case, the perceived behavioural control acts as the moderator to the effect of attitude and subjective norm towards the intention. In its application, these three factors are expected to be different in their significance towards different behaviour, set of people and period. This theory can be considered as a well-constructed and logical theory that is capable of explaining the wide-ranging behavioural performance based on the constructed factors. The application of the theory has been confirmed on numerous occasions such as in health-related behaviour, recycling behaviour, and driving behaviour (Sommer, 2011).

The ethical aspect of products also influences consumer behaviour in decision-making (Bezencon & Blili, 2010). In empirical work conducted by Sun (2019), he explains that the Theory of Planned Behaviour should be extended to ethical products. In predicting consumer buying behaviour, he adds the determinant of confidence

is reflective towards the conduct in the theory of planned behaviour structure. He propounds that, in a specific case, where confidence is low; the high expectation of purchasing ethical products could influence the manifestation of the predicted behaviour. This low confidence is contributed by the factor that the consumer does not possess adequate knowledge pertaining to the available product in the market and does not receive comprehensive information about the claim made about the products. This problem is caused by the ineffective communication of the information by the food producer.

It appears the Theory of Planned Behaviour that illustrates human conduct could be anticipated and perceived through the sequential determinants that are formulated in its framework. Information, intention, and confidence play a crucial role in consumer behaviour purchase decision. Knowledge on consumer behaviour, problems and their needs contribute significantly to future policy decisions to promote a fair competitive environment for consumers (Wilkie & Gardner, 1974). Policy makers can adopt this theory for an effective policy to close the gap between consumers and the existing law or policy.

Given the risk involved in nano particles used in food production, consumers must be given the right to choose what goes into their mouth, and this right co-exists with the need for knowledge. Lack of or no knowledge on the product information would impede the prediction of consumer purchasing behaviour towards nano food, thus preventing an effective law or policy to be made in respect of nano food governance. Besides, for products that exhibit potential risk such as nano food, although the product cannot be ethical per se, it can be accelerated by fair attributes that are positively perceived.

Ariff et al. (2014) argued that food labelling plays an important role towards consumer conduct as it serves as an additional value to the consumer products in the market. Similar to Sun (2019), he emphasizes on the existence of labelling to exert confidence in consumers when making decision to purchase and to consume. This evidently shows that viable communication through labelling is an essential part, which impacts the consumer's buying behaviour. This is also propounded by Witzling et al. (2015) that knowledge can be conveyed adequately through signs which could be made through labelling in regard to food products.

In conclusion, the need for consumers to be accorded with the right to an informed choice for nano food consumption can be grounded on the Theory of Planned Behaviour. The presence of informed choice through labelling could influence consumer behaviour in purchase decision-making, ergo legitimizing its existence in this theory. The ability to predict consumer purchasing and consumption behaviour is associated with the government's intention to protect consumers from harm and it can be applied to policy making and other consumer protection efforts.

Consumerism Theory

The Consumerism theory is a set of theories that revolves around the relationship between the consumer and the seller in an economic setting. The idea of consumerism emerged when humanity found the ability to sell and purchase through trading activities. Not long after came the rise of the Industrial Revolution, which saw a gigantic expansion in consumer goods in the market, for example, clothing, automotive, and food. Since then, consumerism has been extraordinarily revived (Nandi, 2016). From that point forward, researchers from different disciplines have attempted to provide diverse meanings to the word consumerism to precisely portray this theory.

As humankind progressed, consumerism was ingrained in the market system and consumer law sphere. Some examples include the protection of consumers' rights, the satisfaction of the consumer and also the significance of the Consumerism Theory towards the improvement of the economic system. For the purpose of this paper, the Consumerism Theory that will be referred to shall be taken from the context of consumer protection in the economic market.

Referring to Kotler (1972), consumerism can be portrayed as a social development that desires to elevate and maintain the rights and power of the consumer in the market. He accompanied this idea in the wake of taking a gander at the customary rights claimed by sellers and consumers in the United States market, where the seller expectedly has the high ground over the consumer. The seller also has more rights exposed to a certain guideline; for example, the determination of the price, the formulation of messages for the goods, and the introduction of the incentive scheme. On the other hand, the consumer just has

rights; for example, the option to buy the item and the option to anticipate the safety of the product. Kotler further contended that the consumer is powerful enough in the market because his buying power is deficient and lacking; henceforth they qualify for extra rights.

Based on a thorough investigation, it can be identified that there are two reasons under the Consumerism Theory which justify the need for the right to informed choice in nano food consumption. The primary reason is the concealment of nano-related ingredients in food products and packaging is against the idea of consumer protection that is encapsulated in the Consumerism Theory. The subsequent reason is that the practice of concealing information would further increase the food producer's leverage as compared to the consumer, in the economic market.

The first abovementioned reason can be clarified through the comprehension of the essential thought underlying consumerism theory which is consumer protection. Despite the fact that the consumerist movement has pushed for consumer protection well before any enactment of laws and executive orders, through the Consumer Bills of Rights, the United States of America's President John F. Kennedy in the year 1962 captured and finalised the idea to protect the consumer in the economic market through proper legislation. These Consumer Bills of Rights covered four essential consumer rights that should be upheld, namely, the right to be informed, the right to choose, the right to safety, and the right to be heard. Ultimately, these rights turned into the benchmark for consumers and served as the basis for any consumer protection laws. In the event that any economic market violates any of these rights, the act can be considered to be in contradiction with the protection of consumers' rights. With regards to nanotechnology, researchers such as Kotler (1972) and Nandi (2016) are in conflict as to whether the use of nanotechnology in the food industry may harm the consumer or otherwise. If there is proof demonstrating that the consumption of nanotechnology in food is causing negative repercussions towards the consumer and these dangers are not appropriately disclosed to the consumer, it is safe to deduce that the rights to safety and the right to be informed that ought to be enjoyed by the consumer are infringed, thus signalling that consumer protection has been encroached. Considering this reasoning, the need for the right to informed choice through labelling requirement in nano food

is justified. This will circumvent the encroachment or infringement of consumers' rights as envisaged in the Consumerism Theory.

The second reason which justifies the need to accord the privilege to an informed choice for nano food is due to the act of food producers who conceal information on the presence of nano particles in food and the consumers' inability to demonstrate the consumption of nanotechnology in food items would additionally expand the food producer's leverage as compared to the consumer in the economic market. This can be perceived from the point of view on the connection between the seller and the consumer in the monetary market, which has been clarified earlier. Ordinarily, the seller or in the context of food production, the food producer would have the upper hand over the consumer, as they have more control in the market regarding the production of goods. Subsequently, based on the principle in the Consumerism Theory, the insufficiency for the consumer to have informed choice in buying and consuming nano food by having nano food labelling would give the food producer more dominance over the economic market when contrasted with the consumer. By applying the reasoning under the Consumerism Theory, it will definitely balance the unequal bargaining power and asymmetrical information between the food producer and the consumer.

To date, numerous practices reflect the food producer's exploitation of the market at the cost of the consumer. Among such practices is food fraud. According to Johnson (2014), the practice of adulterating food for economic gains or commonly known as 'food fraud' is widespread in the food industry by the food producers. This practice involves the addition of foreign substances to food products, removal of a certain element and the replacement of food ingredients either partially or completely. Subsequently, the cost of this food fraud would have to be borne by the consumer. Referring to Lord et al. (2017), this phenomenon of food fraud is caused by internal factors, which are legitimate entities and food producers in the market rather than external factors such as organized crime. This happens because there are conducive or facilitative conditions that raise criminal opportunities to be exploited by the food producer in the economic market. The example for these conditions may include the non-requirement to declare certain harmful food substances. Therefore, to avoid such food fraud in nano food, this theory advocates the right to informed choice to be given to the consumer.

The consumer and the economic market would suffer losses as a result of the activity of food fraud (Moyer et al., 2017). The economic effect can be analysed in the form of money, which includes a decrease in sales, legal fees and product recall. Apart from the decrease in sales, the decrease of consumer trust towards the products could also be considered as the economic effect of this food fraud (Barrere et al., 2020). The other impact would be health impact as illustrated by Johnson (2014), whereby he contended that the practice of food fraud would bring unintended negative repercussions towards the consumer in certain cases, even though this practice is generally harmless to human health. According to Spink et al. (2019) there are three categories of food fraud risk, namely direct, indirect and technical, which can exist simultaneously in a particular food product at a time. Direct risk occurs when there is an immediate danger exposed to the consumer like the use of lethal contaminants or toxicants. Secondly, the indirect risk is when the long-term exposure of toxic contaminants in the body could jeopardize the consumer's health. The last category of food fraud is technical food fraud risk, when the fraud is non-material, such as misrepresenting the documentation of food products.

It might be difficult to anticipate the potential impact of food fraud on food safety. This is because there are various toxins; be they organic, compound or actual that could be embedded in the food ingredients at different stages along the supply chain. These points may not be anticipated in others based on the information which is readily available in other research, databases or experience (Barrere et al., 2020). This is intensified by the reality that some food makers are poorly inspired to expose their process and ingredients in the food products (Rhodes, 2014).

Taking a glimpse at the idea of food fraud and its predominance in the economic market, it is conceivable that nano-engineered materials are utilized by these food producers in upgrading their products, setting aside the negative effects of these materials on the consumer's wellbeing. The food producer can play out this sort of activities because of various elements, such as the supply chain, flexibly and request for supply and demand of the commodity, global price and most importantly the food laws and compliance (Moyer et al., 2017). This shows in the absence of duty and obligation imposed on the food producer to make known of the utilisation of nano particles in

their products, it would lead the economic market to be constantly controlled and dominated by the food producer. The predominance of the food producer due to absence of regulations with respect to the consumption of nano-engineered materials will be utilized to further increase their leverage as compared to the consumer. The idea of giving increased leverage to the food producer as compared to the consumer in the economic market is clearly rejected and against the principle enunciated by the Consumerism Theory.

In view of the underlying principles and rationales offered by the Consumerism Theory, this theory clarifies that the privilege of the consumer, when contrasted with the seller in the economic market, must be elevated to ensure the consumer interest that is traditionally encroached by the food producer is protected. Furthermore, the connection of the reasonings and principles under the Consumerism Theory with the right to informed choice is that the lack of informed choice has infringed the interest and rights of the consumer in the consumer market.

Postmodernism Theory

Postmodernism theory can be commonly seen as a movement which arose during the 1970s after the foundation of modernism in the Age of Enlightenment. It is a movement that doesn't just allude to the style of works of art which resists genuine portrayal, nor the distorted style buildings in the European countries; it is more than that. This hypothesis comprises wide-going standards and practices, which set it apart from its predecessor. Postmodernism varies according to the perspective one wishes to see it through. Different scholars of different disciplines have different perceptions of postmodernism. Regardless of the distinctions in translation, postmodernists have faith in the possibility that postmodernism arose as a response towards innovation and to challenge the fundamentals set up through innovation is the central thought of this hypothesis. Subsequently, for one to really comprehend the idea of the postmodernism hypothesis, modernism ought to be grasped first.

Modernism, according to Hicks (2011), refers to the movement where reason and the ability of a human to think logically are emphasized. Like postmodernism, modernism is also a movement that wishes to

differentiate itself from its predecessor, which revolves around the concepts such as the divine, spiritual and superstition. Modernism signifies the shift from believing in the mystic to explain unknown occurrences, to the maximization of the human ability to use their logical methods instead. This has resulted in the scientific rules and concepts which are recognised in multiple branches of science such as medicine and engineering. The scientific concept born through modernism is characterized by its objectivity where everything ought to be objectively quantified. These concepts are labelled by the postmodernist as the metanarratives which serve as a unified system or dogmas which shape the meanings and perceptions of life and truth in general (Firat & Venkatesh, 1993). As a result, this has led to scientific methods which depend solely on objective assessment such as evidence-based practice that is widely used up until today.

The adoption of postmodernism has created an era called post-modernity. Post-modernity is the condition clarified by Shaughnessy and Shaughnessy (2002), that consists of certain characteristics such as the decline of scientific rationality and the emergence of relativism. The possibility of postmodernism has additionally been explained by Heise (2004), as he posited that postmodernism can be described by two primary limbs. First, the most recent progressions of technological and scientific innovations that were not made available in the past eras. Second, like any other postmodernist, he also contended that through postmodernism, scientific rationality has been greatly challenged by postmodern thoughts, especially on the notion of knowledge, human subjectivity and progress.

Summarily, when describing postmodernism, it is worth noting that this movement revolves around their objection towards the structured way of life practised through modernism. This has led to a non-binary perception of the world where a multiplicity of reality is finally considered in making judgement through various disciplines. Postmodernism has also ignited the era where science and technology are being developed in a way that the world has never seen before.

Given the substance of postmodernism theory created in the previous years, its connection with the need for the right to informed choice in nano food consumption can be justified on two grounds. Firstly, the risk assessment mechanism for the nanotechnology that emerged

during the postmodern era shall be formulated in a way it matches the rapid development of technology in this era. This formulation of a new method of risk assessment justifies the need for the insertion of an informed choice element and right which has not been included before. The analysis can be made by investigating the underlying principle of Postmodernism Theory in the advancement of technology which has abandoned the scientific quest for pure knowledge will be observed. Secondly, understanding the progression of nanotechnology fills in as the manifestation of the postmodern period. Thirdly, as the result of the rapid advancement of technology, the development of risk assessment which has lagged can be witnessed. Fourthly, as for the effect, there is a need for the risk assessment mechanism to be updated in the way it matches the rapid development of nanotechnology by according the right to an informed choice through labelling requirement for nano food product.

The second ground that justifies the need of right to informed choice for nano food consumption is the outdated risk evaluation mechanism that was created dependent on the customary assumption of science, i.e. the evidence-based approach shall be complemented together with the postmodern tenets of subjectivity and plurality. Because of the enraptured point of view on the impact of nanotechnology on the food item, this polarization shall be recognized, and a middle ground in the form of the right to informed choice shall be incorporated to complement the effort of assessing the risk of nano-related products such as nano food.

As Postmodernism Theory desires for scientific evaluation to be made in another form, it has given a vocation for the usage of informed choice in nano food consumption as it offers justice to the variety of perspectives on the risk status of nano food along with the thought of social science era. By doing this, it is a line through the requirement for balancing between the interest for the nano food to be expanded and the public benefit perception, as asserted by Chen et al. (2013). According to Peat (2007), humans are no longer able to objectify the world in this postmodernism era, due to the complex considerations surrounding the twentieth century that witnessed the drastic revision of the scientific theory. This justifies the adoption of the unorthodox method of incorporating informed choice on nano food consumption despite no solid conclusion indicating the safety status of the nano products which would otherwise require objectivity to be made.

The Postmodernism Theory places two major doctrines which are the rapid progression of science and innovation, and the dismissal of the entire dependence on the objectivity of assessment. Deriving from the principles offered in the Postmodernism Theory, this paper posits for the current risk assessment to be updated by considering the inclusion of right to an informed choice for consumers to enable harmonisation between rapid technological advancement while protecting the consumer.

RECCOMENDATIONS AND CONCLUSION

Whilst the governance of nano food products must be enforced accordingly, it is right for the consumer to be given the right to informed choice in nano food consumption, particularly when it involves public health. From the discussions above, this paper concludes that the Theory of Planned Behaviour, Consumerism Theory and Postmodernism Theory can be adopted as underlying theories for the purpose of legislative reform to accord consumers the right to informed choice in nano food consumption.

Based on the above discussion, the salient features of the related consumer theories can be summarily explained and reiterated in the following. First, the Theory of Planned Behaviour posits that an individual's behaviour is not only influenced by his volitional control, but is also contributed by the external factors such as his knowledge. Second, the Consumerism Theory asserts that the consumer's interest must be protected and the consumers' right should be alleviated in any context in the economic market to strike a balance between the buyer and the seller. Third, Postmodernism Theory moots that rapid technology advancement must be harmonised with the interest of consumer. Having all the salient features of the consumer-related theories summarised, it is clear that all these theories carry different point of views in offering a better protection towards the consumers. Therefore, it is highly recommended for Malaysia to incorporate the underlying principles discussed into the present food legislation and also food labelling framework to account the need for the right to informed choice to consumer in nano food consumption. Based on the examination of the theories above, this paper opines that the exercise of the right to informed choice is possible through statutory labelling

requirement for nano food and consequently, upholding the important pillar in protecting the consumer's rights and interest.

The statutory labelling requirement on nano food will put Malaysia on par with the European Union (the EU) in dealing with nano food and consumer rights. Recently, the EU has undergone legal reform in their food regulatory framework by introducing Regulation No 178/2002. The reform assures a high level of protection of consumers' health and interest concerning nano food (Justo-Hanani & Dayan, 2015). Any food product containing engineered nanomaterials must be labelled with the word 'nano' as prescribed by the Regulation No 1169/2011. Apart from this, the EU has also passed Novel Food Regulation which came to force on 1 January 2018 to govern novel food, which includes nano food. The underlying principle underpinning Novel Food Regulation is that novel food must be safe for consumers and it must be properly labelled, so as not to mislead the consumers and labelling is an indicator of consumers having the right to informed choice.

The Theory of Planned Behaviour, Consumerism Theory and Postmodernism Theory, clearly illustrate and offer justifications that there is a need for the right to informed choice through labelling to be given to the consumer when it comes to the consumption of nano food. This is vital in ensuring that consumer is well informed about the 'nano' status of the food and to allow them to make informed choices before proceed to purchase and consume it. Besides that, the notion of protecting consumer's rights and interest always lies on the responsibility of the government. Therefore, imposing a labelling requirement in the legislation is the correct approach in upholding the consumers' rights. Owing to this fact, labelling should be made as the regulatory route to uphold consumers' rights to information and informed choice.

In sum, based on the principles and rationale offered by the three relevant consumer-related theories, which are the Theory of Planned Behaviour, Postmodernism Theory, and Consumerism Theory, theoretical justifications can be deduced to support the need for consumers to be accorded with the right to informed choice. This can be achieved through labelling requirements for nano food consumption. Future research is recommended to be conducted on the mechanism and application of labelling in nano food for a better

consumer protection regime. In order to effectively advocate the adoption of these three theories as underlying theories for legislative reform in the food regulation framework, this paper also proposes for an empirical study to be conducted in future to collect quantitative data on the viability of these theories and the labelling mechanism. The data collected will serve as evidence-based justification for the said legislative reform purpose.

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