The Relationship Between Green Marketing and Consumers' Buying Behavior Towards Green Products. A Field Study on Organic Food Industries in Egypt

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Abstract

The purpose of this study is to investigate the nature of the relationship between green marketing and consumers' buying behavior towards green products in Egypt. Accordingly, a statistical analysis was carried out based on data collected, using a questionnaire instrument, from 400 consumers who buy organic food in Egypt. Reliability and validity of the study instrument has been checked. The results show that the study instrument is reliable, as well as the study values are considered highly valid and acceptable. The research hypotheses were tested. The main findings of the first hypothesis show that there is a significant relationship between green marketing and consumers' buying behavior towards green products in Egypt. The main findings of the second hypothesis show that there are significant differences between consumers regarding their buying behavior towards green products according to their demographic characteristics.

Keywords: Green marketing, consumer buying behavior, green products, environmentally – friendly products, green marketing mix.

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العلاقة بين التسويق الأخضر وسلوك شراء المستهلكين تجاه المنتجات الخضراء.
دراسة ميدانية على الصناعات الغذائية العضوية في مصر

ملخص البحث

يهدف البحث إلى معرفة طبيعة العلاقة فيما بين التسويق الأخضر من ناحية وسلوك شراء المستهلكين تجاه المنتجات الخضراء في مصر من ناحية اخري. طبقاً لذلك، اعتمد البحث على أسلوب الدراسة الميدانية باستخدام قائمة استقصاء. تم توجيه استمارة الاستقصاء إلى 400 مستهلك يقوموا بشراء المواد الغذائية الخضراء في مصر. كما تم التحقق من مدى ثبات وصدق النتائج الموجودة في استمارة الاستقصاء. أثبتت النتائج أن القيم الموجودة باستمارة الاستقصاء تتمتع بدرجة عالية من الثبات والصدق والقبول.تم اختبار فروض البحث، و أظهرت النتائج النهائية فيما يخص الفرض الأول أنه توجد علاقة ذات دلالة معنوية فيما بين التسويق الأخضر من ناحية وسلوك شراء المستهلكين تجاه المنتجات الخضراء في مصر من ناحية أخرى. و فيما يخص الفرض الثاني، أوضحت النتائج النهائية أنه توجد فروقات ذات دلالة معنوية بين المستهلكين فيما يخص سلوكهم الشرائي تجاه المنتجات الخضراء في مصر.

1. Introduction.

At the beginning of 1980s, some environmental issues emerged such as global warming, the green house effect, air and water pollution, as well as climate changes, which in turn affected the environment and human health. (Yazdanifard 2014, p. 33). This resulted in increased consumers' awareness of the environmental problems and challenges confronting them. According to Fuiyeng and Yazdanifard (2015) consumers became more concerned about the environment, public health, and nations' wealth in order to protect human health, earth's resources, as well as to preserve the environment at the same time. Hence, consumers' demand for green products increased, especially when those environmental issues facing the whole world have become more pronounced. (Fuiyeng and Yazdanifard, 2015, p. 1). Accordingly, the changes in consumers' purchasing behavior have forced businesses to modify their offerings to fit such changing consumers' needs and desires.

Consumers have become highly aware of the negative impacts of using products and services on the environment as well as on human health. (Mayank and Amit, 2013, p.1). As a result, most businesses have accepted their social responsibility not to harm the environment and public health. Businesses have realized that they can reduce pollution and achieve high profits at the same time. (Maheshwari, 2014, p. 2). Thus, businesses began to go green and had produced environmentally – friendly products that are not harmful on both the environment and human health as well; with the aim to satisfy consumers' needs & wants, exceed their expectations, as well as to gain a competitive advantage.

Green marketing is the most latest and popular marketing trend. It acts as a creative opportunity for all companies to

innovate in many different ways with the aim to protect the environment, human health, and to achieve business success as well. Its main purpose is to minimize the amount of harm given to the environment and also to protect human health. (Solihin, et al., 2019, p. 5; Maheshwari, 2014, p. 2).

2. Literature review.

2.1 Definition of green marketing.

There is no one universally accepted definition of green marketing, rather there is more than one definition. Hence, defining green marketing is not a simple task, since several meanings are introduced and various definitions may intersect with each other. (Macharia, et al., 2017, p. 69; Bagheri, 2014, p. 76).

The term green marketing is used interchangeably with "sustainable marketing", "ecological marketing", or "environmental marketing". (Govender and Govender, 2016, p. 77). The term green marketing was firstly introduced by the American marketing association (A.M.A) in 1975 through its first work shop "Ecological Marketing" to examine the impact of marketing on the natural environment.

The American marketing Association (A.M.A) defined green marketing as "marketing of eco-friendly products, combining several activities such as product modifications, changes in production processes, packaging, labeling, advertising strategies, and also raising awareness on marketing compliance between industries. (Solihin, et al., 2019, p. 3663; Macharia, 2017, p. 69; Fuiyeng and Yazdanifard, 2015, p. 17).

Macharia, et al. 2017; Ercis and Kalafat, 2016; Kinoti, 2011, stated that "green marketing consists of marketing activities which involve the production, pricing, distribution, and promotion of nature friendly products that help businesses reach its goals, while at the same time meeting customers' needs and desires with minimal harm to the natural environment.

Moreover, Kinoti, 2011, p. 264; as well as Macharia, 2017, p. 69 added that "according to AMA, green or ecological marketing refers to the study of the positive and negative aspects of marketing activities on pollution, energy depletion, and non-energy resource depletion. Also, AMA describes green marketing, as the marketing of products that are presumed to be environmentally safe."

In addition, Dangelico and vocalleli, 2017 defined green marketing as "the process of planning, implementing, and controlling the development, pricing promotion, and distribution of products in a manner that satisfies the following three criteria: (1) customers' needs are met, (2) organizational goals are attained, and (3) the process is compatible with eco-system."

2.2 The origin of green marketing.

The idea of green marketing came into existence during the 1980s, as a result of environmental degradation. Consumers' demand for eco-friendly products was the main reason behind the evolution of green marketing. (Govender and Govender, 2016, p. 77). Surya and Banu (2014) stated that the evolution of green marketing had three phases. The first phase was named "Ecological Green Marketing", in which green marketing activities were concerned with the environmental problems, and

how to provide useful solutions for such problems. The second phase was "Environmental Green Marketing", in which the focus shifted to clean technology that involved designing innovative new products with the aim of reducing pollution and wasteful activities. The third phase was termed as "Sustainable Green Marketing", which came into existence in the late 1990s and early 2000s, as the result of the term "sustainable development" that means; defining the needs of the present without compromising the ability of future generations to meet their own needs. (Surya and Banu, 2014, p. 1).

2.3 Green marketing mix.

Green marketing mix encompasses four main elements known as 4 P's similar to that of the conventional marketing mix which includes green product, green price, green promotion, and green place. (Govender and Govender, 2016, p. 78). The elements in green marketing mix are essential to offer target consumers quality products at the right time, right place, and right price. (Solihin, et al., 2019, p. 3663). The challenge for marketers is to use 4 P's in an interactive way in order to achieve the firm's objectives as well as the environmental welfare. (Surya and Banu, 2014, p. 3).

The following section focuses on explaining each of the following green marketing mix elements as follows:

2.3.1 Green product.

A green product refers to a product which is produced in a manner that is environmentally conscious; that is to say has minimum negative effects on the environment, non-toxic, made from recycled materials, minimally packaged, not tested on animals, not polluting the environment,

contains natural ingredients, and includes original growth. (Mantiaha, 2016, p. 60; Govender and Govender , 2016, p. 78; Bagheri, 2014, p. 76).

Environmentally friendly features of products could be shown in different stages of product lifecycle; that is to say before usage, during usage, and after usage. (Dangelico and Vocalelli, 2017, p. 1271).

Most common production strategies for green products are recycling, reusing of the product or part of it, reducing packaging, making products more durable, renewable, repairable, compostable, healthy, safer in shipment, energy - efficient, water efficient, third party certified to public, or transport standard. (Devakumar, et al., 2018, p. 33). For example: Nike is the first among the Athletic Shoe companies to market its Air Jordan shoes as environment – friendly, since it has reduced the usage of harmful glue adhesives. (Surya and Banu, 2014, p. 3). Another example: Toyota produced an environment friendly car named Pirus which has an environment engine that includes emission – reducing gasoline, resulting in lowering the pollution emitted to the atmosphere. (Yazdanifard, 2014, p. 34).

2.3.2. Green price.

Dangelico and Vocalelli (2017) defined green pricing as "setting prices for green products that offset consumers' sensitivity to price against their willingness to pay more for products' environmental performance".

They added that green price is an important element in green marketing mix. Green products require consumers to pay premium price in order to buy them. (Dangelico and vocalelli, 2017, p. 1271). The term "premium price" refers to the additional cost that consumers will have to

pay compared to the traditional product in order to get a product with higher environmental performance. Premium prices arise as a result of extra costs firms incur in making a product green such as procuring new technology or modification of existing technology, or green power/energy which requires a lot of money to be spent on R & D programs. In addition, high investments are required in marketing promotions to create awareness regarding green products. (Mayank and Amit, 2013, p.6).

Mayank and Amit (2013) added that; on one hand, consumers may not be willing to pay a premium for green products as they regard them to be more expensive than traditional products. Hence, this may affect company's sales, profitability as well as market share. On the other hand, consumers may be willing to pay a premium price for green products but only if they perceive additional benefits in those products such as improved performance, function, design, quality, visual appeal or taste, environmentally safe, fuel efficient, and non-hazardous. (Solihin, et al., 2019, p. 3663, Deva-kumar, et al., 2018, p. 33, Surya and Banu, 2014, p. 6, Mayank and Amit, 2013, p. 6).

2.3.3. Green Promotion.

Solihin, et al. (2019) emphasized that green promotion refers to promoting the company's green products to the target market. This allows consumers to obtain information about those green products. Green promotion involves organizing various tools for promotion such as advertising, public relations, sales promotion, direct marketing and onsite promotion.

Govender and Govender, 2016; Bagheri, 2014 added that advertisements are very effective in increasing consumers' awareness and knowledge about the environment and green products, thus helping them make informed decisions about the products they consume and their impact on the environment. Therefore, environmental advertisements can help to enhance consumers' motivation towards buying green products. Moreover, companies should have a large range of sales promotional tools such as coupons, offers, and premiums in order to obtain favorable response of consumers in buying eco-friendly products. (Mantiaha, 2016, p. 60). Govender and Govender 2016; Bagheri, 2014 emphasized that consumers' choice of green products is greatly influenced by packaging. Packaging serves to contain, identify, describe, protect, display, promote, and make the product marketable. They added that visual aesthetics surrounding the product's packaging can be used as an effective marketing tool especially when consumers don't have prior knowledge about the product.

Promotional tools used in green marketing:

A. Eco – label:

A visible label in product packaging is an essential mean used to convince consumers that company's products don't harm the environment or violate animals during production. (Maheshwari, 2014, p. 3). Firms use eco-label as an information provider about green products. Maheshwari (2014) defined eco-labels as "labels which identify the overall environmental preference of a product or service within a specific product or service range". An eco-

labeled product carries a logo that describes how the product is being produced in accordance with certain environmental standards.

B. Eco – brand:

Sanidew and Paramita (2018) stated that eco-brand is the combination of symbols and other designs that convey the environmental harmless products. Eco-brands have emerged in various kinds of product categories such as food, cosmetics, cleaning products, and product packaging.

C. Environmental advertisement:

Sanidew and Paramita (2018) emphasized that environmental advertisement is an advertisement which contains environmental aspects. Its purpose is to influence and encourage consumers to purchase green products by considering the environmental issues. Therefore, it will guide consumers for not harming the environment and to be aware of the positive impacts in purchasing green products. Hence, firms should decide on the specific environmental issues that will be featured in the advertisement. For instance, in Indonesia, mineral water brands such as Aqua and Ades, express their environmental advertisements by squeezing the empty bottles. The purpose is to avoid the reuse of plastic bottles. (Sanidew and Paramita, 2018, p. 16).

2.3.4 Green place.

Green place is an important element of green marketing mix. Green place refers to the physical distribution which is a set of business activities that involve the movement of storing, transporting finished products

from production to consumption, while maintaining concern with the environmental responsibility of the firm. (Yazdanifard, 2014, p. 35). He also added that firms have to provide green products at a strategic place that is convenient for consumers to access. The location and accessibility to goods and services have a great impact on consumers' purchasing decisions, since most consumers are not willing to travel far to purchase a green product, but will rather choose closer alternatives. Hence, when green products are easily accessible, green purchasing is encouraged. (Govender and Govender, 2016, p. 79). Solihin, et al., 2019 added that the options of where and when should make the product available has a significant effect on customers especially that only few customers are interested in buying green products. Thus the location must be appropriate with the company's image. Moreover, the company's location must differentiate the company from its competitors. (Solihin, et al., 2019, p. 3663; Surya and Bany, 2014, p. 4). Green distribution focuses on safety precautions and reduces environmental damages during the process of delivering products. For example: reducing the thickness of packaging will reduce the fuel that is consumed by trucks, which in turn will reduce the negative impacts on the road. Consequently this will decrease the transportation costs. Optimize carriers, as well as reduce material consumption. (Dangelico and Vocalelli, 2017, p. 1272).

2.4. Benefits of green marketing.

Firms which offer environmentally – friendly products can achieve a lot of benefits such as:

1. **Increased revenues**: Green products that achieve

consumers' satisfaction will increase company's sales and revenues. (Fuiyeng and Yazdanifard, 2015, p. 21).

2. **Increased market shar**e: Companies that develop new and improved goods and services while putting into consideration the environmental aspects give themselves an access to new international markets. (Surya and Banu, 2014, p. 2; Yazdanifard, 2014, p. 34; Maheshwari, 2014, p. 3).

3. **Maximized profitability**: Practicing green marketing ensures sustained long-term growth along with maximizing profitability. Green-based products create less wastes, use fewer raw materials, as well as save energy. (Surya and Banu, 2014, p. 2; Kinoti, 2011, p. 270).

4. **Competitive advantage**: Companies that initiate to produce environmentally-friendly products enjoy competitive advantage over those which are not concerned with the environment. (Surya, and Banu, 2014, p. 2, Kinoti,2011, p. 270).

5. **Better products**: Green products are higher in quality in terms of energy-saving, performance level, convenience, safety, health, …etc. (Kinoti, 2011, p. 270).

6. **Personal rewards**: Green products offer consumers with many benefits including being healthier, more fulfilled lives, as well as having a power to make the world a better, place. (Kinoti, 2011, p. 270). In addition, the employees will be more confident, proud and satisfied with the stable position of the firm; as well as more responsible to be working for an environmentally – responsible company (Surya and

Banu, 2014 p. 2; Yazdanifard, 2014, p. 34).

7. **Better physical environment**: Well-coordinated use of green marketing strategies will result in better physical environment in terms of reduced air and water pollution, water and energy depletion, global warming, depletion of natural resources, and rate of landfills. All this will decrease the negative impacts on human health and environment. (Kinoti, 2011, p. 270).

8. **Government subsidies**: Another important benefit of green marketing is getting tax breaks and loans from the government, because those innovative companies which save the environment and health of nation will bear uncertain risks. (Fuiyeng and Yazdanifard, 2015, p. 21). In addition, firms can receive grants and loans from the environment to set up the technology for the development of the firm's innovative environment products and technologies. (Yazdanifard, 2014, p. 34).

9. **Cost minimization**: Reduction of harmful wastes may lead to savings, through reducing the operations and production costs in the long-term. (Surya and Banu, 2014, p. 2; Yazdanifard, 2014, p. 34).

10. **World salvation**: For the disposal and treatment of wastage, companies will produce emissions of many greenhouse gases which contribute to global climate change. This can cause greenhouse effect. (Fuiyeng and Yazdanifard, 2015, p. 21).

2.5. Challenges of green marketing.

Many firms fail to implement green marketing successfully due to many challenges facing those companies which practice green marketing, including:

1. Green products require renewable and recyclable

materials, which is relatively costly. (Surya and Banu, 2014, p. 4).

2. Practicing green marketing requires the implementation of green technology which in turn needs either procuring new technology or modification of existing technology. (Surya and Banu, 2014, p. 4; Mayank and Amit, 2013, p. 6).

3. Majority of people are still not aware of green products availability and their uses. Thus, high investments in marketing promotions are required in order to create consumers' awareness regarding green products and their uses. (Surya and Banu, 2014, p. 4; Mayank and Amit, 2013, p. 6).

4. Green marketing requires green power/energy which needs a lot of money to be spent on R & D programs. (Maynak and Amit, 2013, p. 6).

5. Many consumers are not willing to pay a premium price for green products, which may affect the company's market share, sales, revenues, and profitability. (Surya and Banu, 2014, p. 4; Mayank, and Amit, 2013, p. 6).

6. Some consumers don't pay attention to the environmental claims in green advertisement of those products. For instance: some green advertisements illustrate the eco-centric image of the firm. As a result, the advertised green product failed to attract consumers' attention. (Yazdanifard, 2014, p. 36).

7. It requires the companies practicing green marketing to extensively communicate the availability of green products as well as to illustrate its benefits to

consumers by using various tools of integrated marketing communications (IMC). This may encourage consumers to be aware of green products availability, and thereby buy them.(Mayank and Amit, 2013, p. 6).

8. Due to consumers' lack of knowledge regarding green products, consumers don't trust the eco-labels, which may result in the ignorance of eco-labeling. (Yazdanifard, 2014, p. 36).

9. Some consumers perceive green products which are manufactured with recycled materials as having poor performance relative to conventional products' performance. (Yazdanifard, 2014, p. 36).

10. Some firms have limited scientific and business technology knowledge which may cause incorrect decisions to be made leading to further danger towards the environment. For instance: some firms use DME (dimenthy ether) as an aerosol propellant, which has a negative impact on ozone layer. (Mayank and Amit, 2013, p. 271).

11. The firms practicing green marketing should obey the government's laws and regulations according to FTC's guidelines in order not to mislead any consumer or industry members. Those firms have to practice green marketing in accordance to FTC's guidelines which describe the environmental benefits; providing the environmental criteria, explaining the way through which the environmental benefits are achieved, developing comparative advantages, avoiding the hazardous content and expressing the environmental claims in picture.(Yazdanifard, 2014, p. 36).

12. Environmental benefits are intangible, indirect, and

insignificant to consumers. For example: consumers can't see the emissions being spared when they use energy-saving appliance. (Kinoti, 2011, p. 271).

13. Environmental benefits are difficult to measure or quantify. (Kinoti, 2011, p. 271).

14. The success of green marketing depends on several stakeholders who should work as a team. They include general public, employees, retailers, government, environmental groups, as well as suppliers. (Kinoti, 2011, p. 271).

15. Some strategies including promotion are subject to manipulation. For example: some marketers use false environmental claims in order to gain competitive advantage. (Kinoti, 2011, p. 271).

2.6. Green consumer.

The green consumer is someone who is concerned about the welfare of the environment, thus he/she shows environmentally – friendly behavior, supports eco-friendly attitudes, as well as purchases green products. (Govender and Govender, 2016, p.78; Fuiyeng and Yazdanifard, 2015, p. 20). Green consumers would stop consuming any harmful products which may affect their health, involves torture of animals, or causes damage to the environment during production process, disposal or use. (Yazdanifard, 2014, p. 34). For example: When a consumer has to choose between two similar products, the green consumer will choose to buy an environmentally – friendly product known as green product. (Fuiyeng and Yazdanifard, 2015, p. 20).

2.7. Consumer buying behavior.

Consumer buying behavior refers to consumers' way of buying something that they need or want. (Mantiaha, 2016, p. 60). Yazdanifard (2014) added that consumer buying behavior means the actions of consumers who identify a need or want, search for information, then purchase, and finally give feedback on the product or service in order to fulfill their desires. Thereby, consumers' buying decision is the most precise indicator of consumers' purchase behavior. (Wu and Chen, 2014, p. 84).

Green buying decision is a kind of eco-friendly behavior that consumers perform to express their concern to the environment. (Bagheri, 2014, p. 76). He also added that green buying decision means considering the environmental issues when making purchase decisions. Moreover, green buying decision refers to the consumers' performance of eco-friendly products over the traditional ones when making purchase decisions. Thus consumers who care about the environmental issues tend to consume the green products. (Sanidew and Paramita, 2018, p. 16).

According to Solihin, et al. (2019), consumers' buying decision means a decision that involves the consumers' selection of an alternative among all available alternatives in order to satisfy their needs, wants, or desires. They added that consumers' buying decision is a process that passes through the following 5 steps:

- **Step 1: problem recognition:** The purchase process starts when the buyer recognizes a problem or need. Needs are triggered by internal or external stimuli.

- **Step 2: Information searching:** Consumers whose needs are triggered, will be motivated to collect information about the product or service needed either

through reading material, calling friends, or visiting stores.

- **Step 3: Alternative evaluation:** The consumers' evaluation process is a cognitive – oriented process, which means that consumers' judge the product consciously & rationally. Thus, consumers will have positive attitudes towards the attributes of the product which seem to be relevant and important, as well as benefit them.

- **Step 4: Buying decision:** In which consumers will choose to buy a certain product among all available products. Consumers' buying decision is influenced by two factors; first: others' attitudes, second: an unanticipated situation such as price.

- **Step 5: Post – purchase behavior:** After purchasing a product, consumers will experience a certain level of satisfaction or dissatisfaction named as cognitive dissonance, which will in turn affect consumers' behavior afterwards. For instance: if consumers are satisfied, they will come to re-purchase the product once again, and vice-versa.

3. Research design and methodology:

3.1 Research problem:

In the light of the pilot study and previous studies, the research problem can be specified as follows:

What is the nature of the relationship between green marketing and consumers' buying behavior towards green products in Egypt?
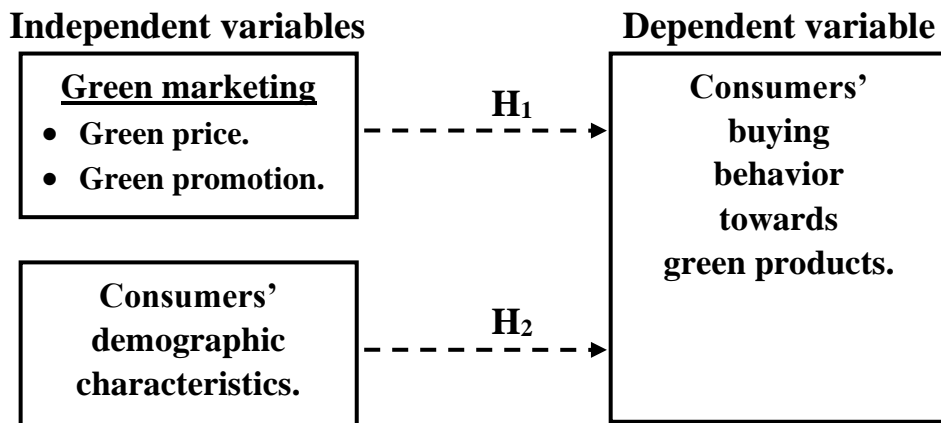
3.2 Research variables:

3.2.1 Independent variables:

1. Green marketing.
2. Consumers' demographic characteristics.

3.2.2 Dependent variable:

1. Consumers' buying behavior towards green products.

Figure (1)

Independent variables   **Dependent variable**

Source: The figure was depicted by the researcher in the light of previous studies (Solihin, et al., 2019; Devakumar, et al., 2019; Nguyen, et al., 2019; Tariq, 2018).

3.3 Research hypotheses:

To study the research problem, it is necessary to test the following two main hypotheses, which are developed in the light of the literature review.

The first main hypothesis:

H_1: There is no significant relationship between green marketing and consumers' buying behavior towards green products in Egypt.

The first main hypothesis includes two sub-hypotheses as follows:

> **Sub-hypothesis 1**: There is no negative relationship between green price and consumers' buying behavior towards green products in Egypt.

> **Sub-hypothesis 2**: There is no positive relationship between green promotion and consumers' buying behavior towards green products in Egypt.

The second main hypothesis:

H_2: There are no significant differences between consumers regarding their buying behavior towards green products according to their demographic characteristics.

3.4 Research objectives:

The main objectives of this research are:

1. To emphasize the nature of the relationship between green marketing and consumers' buying behavior towards green products in Egypt.

2. To raise consumers' awareness level towards protecting the environment through launching extensive promotional campaigns via different advertising media.

3. To communicate the health benefits of organic food that protects public health, by showing how it differs from ordinary food.

4. To encourage organic food industries to make and develop organic food everywhere in Egypt, through providing them governmental subsidies and loans.

5. To help companies achieve survival and growth on the long-run through gaining competitive advantage, large market share, maximized profits, as well as through achieving customers' satisfaction, loyalty, retention, and positive word of mouth.

6. To investigate the barriers that may prevent consumers from buying green products in Egypt such as green price, and how to solve such problem.

3.5 Research importance:

The importance of this research stems from the following reasons:

1. The practice of green marketing in Egypt is one of the most important issues, since green marketing is primarily concerned with protecting the public health, as well as preserving the natural environment, which is an important issue that can't be ignored.

2. The main findings concluded from this research will contribute to marketing management literature in general, as well as green marketing practice in particular. This in turn may provide other researchers with useful ideas in order to be able to conduct a research in the field of green marketing.

3. Scarcity of Arabic researches handling the subject of green marketing practice.

4. The major contribution of this research is to provide some recommendations for other food manufacturing companies which still don't practice green marketing in Egypt.

3.6 Measures:

The hypotheses of this study were tested based on using a survey instrument directed to green consumers who buy organic food in Egypt. The research variables were developed based on extensive literature review. The survey instrument (questionnaire) consists of questions with closed-form responses using five-point likert scale. The questionnaire was originally prepared in English and then translated into Arabic. The complete questionnaire including detailed items of each variable is presented in appendix 1.

3.7 Research population and sample:

3.7.1 Research population:

The research population consists of all green consumers who buy organic food in Egypt, which refers to a large and unlimited number.

3.7.2 Research sample:

Due to the large size and unlimitedness of the population, as well as the physical impossibility of checking all elements in the population; accordingly, the systematic random sampling technique was the most suitable one for this research.

The sample was chosen by selecting a random starting point and then picking every element in succession from the sampling frame. By looking to the different statistical tables that can be used in determining a sample size such as t-table, at level of confidence (95%), margin of error ($\pm$ 5%) , and an estimate of population proportion (50%), we can find that the sample size is 384.16 element; approximated to 385 elements, as illustrated in the following equation:

$$\left[\quad \right]^2$$

$$n = P (1 - P) \quad \dfrac{Z}{E}$$

Where:

- n   : is the sample size.
- P   : is the population proportion, P = 0.5
- Z   : is the standard normal value corresponding to the desired level of confidence, Z = 1.96.
- E   : Is the maximum allowable error.

So, by substituting the above figures, we can calculate the sample size as follows:

$$n = 0.5 (1 - 0.5) \left[\dfrac{1.96}{0.05} \right]^2 = 384.16 \cong 385 \text{ elements}$$

3.8 The response rate:

The questionnaire was distributed to 420 green consumers who buy organic food in Egypt. 20 questionnaires were excluded and removed from the sample for being largely incomplete, and only 400 out of 420 questionnaires were collected. The remaining 400 usable questionnaires reflected an acceptable response rate of 95.2%, which was considered highly reasonable compared with other green marketing studies.

3.9 Reliability and validity of the measures:

3.9.1 Reliability:

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials.
To check the reliability of study instrument, Cronbach's alpha coefficient was calculated. This coefficient varies

between zero (for no reliability) and unity (for maximum reliability).

Table (1) demonstrates that all reliability coefficients are deemed acceptable, since each exceeds the benchmark of 0.7[1]. Thus, it could be concluded that the study instrument is reliable.

3.9.2 Validity:

Validity is defined as the extent to which the instrument measures what is purports to measure[2].

To check validity, self-validity coefficient was calculated. This coefficient is defined as the square root of the reliability (Alpha) coefficient.

The results in table (1) indicate that the validity coefficient ranged between 0.884 and 0.966. These values are considered high and acceptable.

Table (1): Reliability and validity coefficients

Dimensions	No. of Items	Alpha Coefficient	Self-Validity Coefficient
Green price	6	0.783	0.884
Green promotion	21	0.877	0.936
Consumers' buying behavior towards organic food	7	0.935	0.966

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(1)   Hair, J., et al. (2010), **Multivariate Data Analysis.** Upper Saddle River: Prentice Hall, p.4.

(2)   Hair,J.,et al.(2010),**Op.cit**, p.4.

Based on the previous results, it could be concluded that the study instrument is reliable and valid.

Characteristics of respondents:

The following table shows the main characteristics of the sample respondents.

Table (2): Characteristics of the sample respondents

Characteristics		N	%
Gender	Male	88	22.0
	Female	312	78.0
	Total	400	100.0
Age	Less than 30 years	80	20.0
	30 – 40 years	192	48.0
	Above 40 years	128	32.0
	Total	400	100.0
Educational qualification	University or less	96	24.0
	Postgraduate	304	76.0
	Total	400	100.0
Occupation	Employed	296	74.0
	Other	104	26.0
	Total	400	100.0
Income level	Less than 4,000 L.E.	96	24.0
	4,000 – 10,000 L.E.	224	56.0

	More than 10,000 L.E.	80	20.0
	Total	400	100.0

From the above table, it could be concluded that:

- The sample consisted of 400 respondents; of whom 88 are males (22%) and 312 are females (78%).
- One-fifths of the total sample are less than 30 years old, and nearly half of the sample are 30 to 40 years old.
- In terms of education level, more than three-quarters of the total sample (76%) have postgraduate qualifications.
- About three-quarters of the respondents are employed, and the remaining are retired, students, housewives or unemployed.
- In terms of income level, more than half of the respondents have monthly income between 4,000 and 10,000 L.E., and 24% have monthly less than 4,000 L.E.

3.10 Data analysis and results:

Testing the research Hypotheses:

Testing the first hypothesis.

The first hypothesis states that:

H1: There is no significant relationship between green marketing and consumers' buying behavior towards green products in Egypt.

To test this hypothesis, simple regression analysis is used. The independent variable is "green marketing", and the dependent variable is "consumers' buying behavior towards green products". Results of the analysis are shown in the following table.

Table (3): Results of regression analysis for the relationship between green marketing and consumers' buying behavior towards green products

Variables	Coefficient (B)	T-test	
		t	P-value
Constant	-0.211	-0.960	0.338
Green marketing	1.039	19.745	0.000
F P-value	389.858 0.000		
R R^2	0.703 0.495		

The results in the above table indicate that the overall regression model is significant (F = 389.858, P-value < 0.05).

The value of the coefficient of determination (R^2) is 0.495, i.e. the independent variable (green marketing) explains 49.5% of the variance in the dependent variable (consumers' buying behavior towards green products). The correlation coefficient (R) between independent and dependent variables is 0.703, indicating that there is a strong, positive correlation. The results of T-test showed that there is a statistically significant relationship (P-value < 0.05) between the independent variable "green marketing" and the dependent variable "consumers' buying behavior towards green products". The two variables are positively related.

Accordingly, the first hypothesis is not supported.

The first main hypothesis includes two sub-hypotheses (dimensions of green marketing; include green price and green promotion). To test the relationship between the dimensions of green marketing and consumers' buying behavior towards green products, multiple regression analysis is used. In this analysis, the dependent variable is "consumers' buying

behavior", and the independent variables are the two dimensions of green marketing (green price and green promotion). Results of the analysis are shown in the following table.

Table (4): Results of regression analysis for the relationship between dimensions of green marketing and consumers' buying behavior towards green products

Variables	Coefficient (B)	T-test	
		t	P-value
Constant	-0.420	-1983	0.048
Green price	-0.207	-3.523	0.000
Green promotion	1.245	19.757	0.000
F	261.967		
P-value	0.000		
R	0.754		
R^2	0.569		

The results in the above table indicate that the overall regression model is significant (F = 261.967, P-value < 0.05).

The value of the coefficient of determination (R^2) is 0.569, i.e. the independent variables explain 56.9% of the variance in the dependent variable (consumers' buying

behavior towards green products). The multiple correlation coefficient (R) is 0.754, indicating a strong correlation.

The results of T-Test showed that:

- There is a statistically significant relationship (P-value < 0.05) between the independent variable "green price" and the dependent variable "consumers' buying behavior towards green products". The two variables are negatively related.

- There is a statistically significant relationship (P-value < 0.05) between the independent variable "green promotion" and the dependent variable "consumers' buying behavior towards green products". The two variables are positively related.

Testing the second hypothesis:

The second hypothesis states that:

H2: There are no significant differences between consumers regarding their buying behavior towards green products according to their demographic characteristics.

(A) Differences according to gender:

To test the significance of the differences between consumers' buying behavior towards green products according to gender (male/female), independent samples T-test is used. The result of this test is considered statistically significant (i.e, there is a significant difference between the two gender groups) if the P-value is less than 0.05. Results of the analysis are shown in the following table.

Table (5): Results of T-test for testing the significance of differences in buying behavior towards green products according to gender

Variable	Males		Females		T-test	
	Mean	S.D.	Mean	S.D.	t	P-value
Buying behavior towards green products	4.21	0.714	4.03	0.968	1.943	0.054

From the above table, it could be concluded that there is no difference between males and females regarding their "buying behavior towards green products", as the result of T-test indicates that there is no statistically significant difference between the two groups (P-value > 0.05).

Differences according to educational qualification:

To test the significance of the differences between consumers' buying behavior towards green products according to educational qualification (university or less/postgraduate), independent samples T-test is used. Results of the analysis are shown in the following table.

Table (6): Results of T-test for testing the significance of differences in buying behavior towards green products according to educational qualification

Variable	University or less		Postgraduate		T-test	
	Mean	S.D.	Mean	S.D.	t	P-value
Buying	2.93	1.007	4.43	0.511	-13.966	0.000

behavior towards green products						

From the above table, it could be concluded that there is a difference between consumers who have university or less qualification and those having postgraduate qualification regarding their "buying behavior towards green products". The result of T-test indicates that this difference is statistically significant (P-value < 0.05), in favor of consumers with postgraduate qualification.

Differences according to occupation:

To test the significance of the differences between consumers' buying behavior towards green products according to occupation (employed/other), independent samples T-test is used. Results of the analysis are shown in the following table.

Table (7): Results of T-test for testing the significance of differences in buying behavior towards green products according to occupation

Variable	Employed		Others		T-test	
	Mean	S.D.	Mean	S.D.	t	P-value
Buying behavior towards green products	4.51	0.319	2.82	0.923	18.301	0.000

From the above table, it could be concluded that there is a difference between consumers who are employed and others regarding their "buying behavior towards green products". The result of T-test indicates that this difference is statistically

significant (P-value < 0.05), in favor of those who are employed.

Differences according to age:

To test the significance of the differences between consumers' buying behavior towards green products according to age, one-way analysis of variance (ANOVA) and F-test are used. Results of the analysis are shown in the following table.

Table (8): Results of ANOVA and F-test for testing the significance of differences in buying behavior towards green products according to age

Variable	Mean according to age			F-test	
	Less than 30 years	30-40 years	Above 40 years	F	P-value
Buying behavior towards green products.	2.61	4.32	4.62	369.086	0.000

From the above table, it could be concluded that there are differences between consumers regarding their "buying behavior towards green products" according to age. The result of F-test indicates that these differences are statistically significant (P-value < 0.05), in favor of those who are above 40 years.

Differences according to income:

To test the significance of the differences between consumers' buying behavior towards green products according to income level, one-way analysis of variance (ANOVA) and F-test are used. Results of the analysis are shown in the following table.

Table (9): Results of ANOVA and F-test for testing the significance of differences in buying behavior towards green products according to income level

Variable	Mean according to income level			F-test	
	Less than 4,000 L.E.	4,000 – 10,000 L.E.	More than 10,000 L.E.	F	P-value
Buying behavior towards green products	2.63	4.46	4.68	687.899	0.000

From the above table, it could be concluded that there are differences between consumers regarding their "buying behavior towards green products" according to income level. The result of F-test indicates that these differences are statistically significant (P-value < 0.05), in favor of those having monthly income more than 10,000 L.E.

Based on the previous results, the second hypothesis is not supported.

4. Discussion:

The present study investigates the nature of the relationship between green marketing and consumers' buying behavior towards green products in Egypt.

The first main hypothesis is tested using simple regression analysis. The value of the coefficient of determination (R^2) is 0.495, which means that green marketing explains 49.5% of the variance in consumers' buying behavior towards green products in Egypt. Moreover, the value of the correlation coefficient (R) is 0.703, which indicates into a strong and positive correlation between green marketing and

consumers' buying behavior towards green products in Egypt.

Based on the previous results, the first main hypothesis is not supported. These findings are in agreement with prior research studies (e.g. Solihin, et al., 2019; Devakumar, et al., 2019; Nguyen, et al., 2019; Tariq, 2018).

The first main hypothesis includes two sub-hypotheses which represent two important dimensions of green marketing mix; including green price and green promotion.

To test the relationship between the two dimensions of green marketing mix and consumers' buying behavior towards green products, a multiple regression analysis is used. The main findings show the value of the coefficient of determination (R^2) is 0.569. An explanation of this result is that both green price and green promotion explain 56.9% of the variance in consumers' buying behavior towards green products in Egypt.

Also, the value of the multiple correlation coefficient (R) is 0.754, which indicates into a strong correlation between both dimensions on one hand and consumers' buying behavior towards green products in Egypt, on the other hand.

Concerning the first dimension of green marketing mix; green price: The results of T-test show a negative relationship between green price and consumers' buying behavior towards green products in Egypt. Accordingly, the first sub-hypothesis is not supported. These findings are in agreement with prior research studies (e.g. Davakumar, et al., 2018; Sanidew, and Paramita, 2018; Puspitasari, et al., 2018).

Concerning the second dimension of green marketing mix; green promotion: The results of T-test (19.757) show a positive relationship between green promotion and consumers' buying behavior towards green products in Egypt. Accordingly, the second sub-hypothesis is not supported. These findings are in agreement with prior research studies (e.g. Macharia, et al., 2017; Seyrek and Gul, 2017; Mantiaha, 2016; Jain and Mehta, 2016).

Concerning testing the second main hypothesis: To test the significance of differences between consumers regarding their buying behavior towards green products according to their demographic characteristics:

A- **According to gender:** Independent samples T-test is used. The results of T-test show that there are no differences between males and females regarding their buying behavior towards green products in Egypt, since (P – value > 0.05).

B- **According to educational qualification:** Independent samples T-test is used. The results of T-test show that there are differences between consumers, in favor of consumers with postgraduate qualification.

C- **According to occupation:** Independent sample T-test is used. The results of T-test show that there are differences between consumers, in favor of those who are employed.

D- **According to age:** one-way analysis of variance (ANOVA) and F-test are used. The results of ANOVA and F-test show that there are differences between consumers, in favor of those who are (above 40 years).

E- **According to income:** one-way analysis of variance (ANOVA) and F-test are used. The results of ANOVA and F-test show that there are differences between

consumers, in favor of those having monthly income (more than 10,000 L.E).

Based on all previous results, the second main hypothesis is not supported. These findings are in agreement with prior research studies (e.g. Shabbir, et al., 2020; Nalluri, et al., 2020, Khandelwal, et al., 2019, Al-Ghaswyneh, 2019; Awan, and Raza, 2018; Ferraz, et al., 2017).

5. Conclusion:

The main findings of the present study concluded that there is a significant, positive, and strong relationship between green marketing and consumers' buying behavior towards green products in Egypt. Based on the previous results of the study, it was concluded that green price was one of the major barriers that prevented Egyptian consumers from buying green products. An empirical evidence showed the results of T-test, which indicated into a negative relationship between green price and consumers' buying behavior towards green products in Egypt. In addition to the value of the coefficient of determination (R^2) which explains that green price was a main reason behind not buying green products in Egypt with a percentage of 56.9%.

While, green promotion is a critical success factor that helps in motivating consumers' buying behavior towards green products in Egypt. An empirical evidence showed the results of T-test, which indicated into a positive relationship between green promotion and consumers' buying behavior towards green products in Egypt. In addition to the value of coefficient of determination (R^2) which explained that green promotion played a significant role in motivating consumers' buying behavior towards green products in Egypt with percentage of 56.9%.

The main findings of the study also concluded that there are significant differences between consumers regarding their buying behavior towards green products in Egypt according to their demographic characteristics, in favor of postgraduates, employed people, above 40 years old, with an income of more than 10000 L.E., regardless gender.

6. Recommendations:

Based on the main conclusions of the study, the following recommendations should be considered:

1. Marketing managers should launch extensive promotional campaigns that involve effective advertisements which play a very important role in increasing consumers' awareness level and knowledge about the benefits of green products on protecting both public health and the environment as well.

2. Marketing managers should recognize the importance of using "eco-label" which is a visible label in products packaging and an essential mean that help to convince consumers with buying green products.

3. The price of green products should be reduced to the minimum level. This will encourage many consumers to buy such green products, whether males or females, educated or not, less or post graduated, with low or average income.

4. Organic food industries should make organic foods available everywhere and in large quantities in Egypt, so that consumers don't find any difficulty in finding or buying such products.

5. Egyptian government should encourage food industries in Egypt to go green through providing them some subsidies, loans, or even reducing taxes imposed.

7. Limitations and implications for future research:

The research, on which this paper is based, like much social science research, is affected by several limitations.

First, this study has been conducted in one country (Egypt). Second, the study focuses on one sector of industries, which is organic food industrial sector. Third, the present study focuses on investigating the nature of the relationship between green marketing and consumers' buying behavior towards green products. Although green marketing mix includes four elements: green product, green price, green promotion, and green placing. The present study focuses on two green marketing mix elements only which are green price and green promotion.

Hence, the generalizability of findings needs more examination. In order to enhance the generalizability of the study findings, future researches need to be carried out on other green marketing mix dimensions such as green product and green placing.

The findings of the present study have several implications for food industries which practice green marketing in Egypt. For successful implementation, marketing managers need to focus on the main critical success factors that help in motivating consumers' buying behavior towards green products. They should also understand the barriers that may hinder consumers from buying green products in order to alleviate and overcome them. Finally, marketing managers should recognize the significant importance of going green and its benefits resulting in protecting both public health and the environment as well.

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Appendix 1: The questionnaire

1. Consumers' demographic characteristics information.

- **Name (optional):** …………………………………..

- **Gender:** ☐Male   ☐Female.

- **Age   :** ☐ 20 or below.

                   ☐ More than 20 - 30

                   ☐ More than 30 - 40

                   ☐ More than 40 - 50

                   ☐ Above 50

- **Educational qualification:**

                   ☐ High school degree.

                   ☐ Bachelor's degree.

                   ☐ Postgraduate diploma.

                   ☐ Master's degree.

                   ☐ Ph D- Doctoral degree.

                   ☐ Other (please specify).

- **Occupation:**

                   ☐ Employed.

                   ☐ Others

(Unemployed, retired, housewives, or students.)

- **Income level:**

  ☐ Less than 2000 L.E..

  ☐ Between 2000 and 4000 L.E.

  ☐ More than 4000 and 6000 L.E.

  ☐ More than 6000 and 10000 L.E.

  ☐ More than 10,000 L.E.

2. Have you ever heard about "green or environmentally – friendly" products?

  ☐   Yes.

  ☐   No.

2. The nature of relationship between green price, green promotion on one hand and consumers' buying behavior towards green products on the other hand ?

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
(1) Green price					
1. The price of organic food is expensive.					
2. The price of organic food is higher than ordinary food.					
3. I'm willing to pay a premium price for getting organic food.					

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4. **Even if the price of ordinary food is less expensive, I would prefer to buy organic food which doesn't harm the environment.** 5. **If the price of organic food is less expensive, I'm willing to change my lifestyle by purchasing it.** 6. **I would choose to buy organic food if its price is as the same as the price of ordinary food.**					
(2) Green promotion:					
I- <u>Green advertising</u>: 1. **Green advertising is very important for raising consumers' awareness level towards the availability of organic food in Egypt.** 2. **Green advertising plays an important role in raising consumers' awareness level towards the protection of**					

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
environment.					
3. **Green advertising is a good source of providing consumers with useful information about green products, and how they differ from non-green ones.**					
4. **Green advertising illustrates the health benefits of buying organic food.**					
5. **Green advertising encourages people to be more socially responsible.**					
6. **Green advertising uses different media that help to raise consumers' awareness level towards green marketing practices such as T.V., radio, outdoor, social media.**					

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
II- <u>Eco-packaging (green packaging)</u>: 1. **Packaging helps me to distinguish organic food from ordinary ones.** 2. **The information on organic food packaging is an important criterion to me.** 3. **I trust the information on organic food packaging.** 4. **I can understand the information on organic food packaging easily.** 5. **I appreciate the design of packaging of organic food.** 6. **I prefer to buy food with eco-friendly package that can be recycled and reused.** 7. **I avoid buying products with excessive packaging.**					

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
III- Eco-label: 1. **Eco-label catches may attention towards organic food.** 2. **Eco-label influences me to buy organic food.** 3. **Eco-label is important in choosing organic food.** 4. **Sufficient information is provided on eco-labels of organic food.** 5. **I trust the in information on eco-labels of organic food.** 6. **Eco-labels help me to distinguish organic food from ordinary ones.** 7. **Eco-labels are easy to read.** 8. **Eco-labels are easy to recognize.**					

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
(3) Consumers' buying behavior towards organic food.					
1. I choose to buy products that are environmentally friendly.					
2. I prefer organic food than ordinary food.					
3. I prefer to buy organic food because it is healthier.					
4. I prefer to buy organic food because it is tastier.					
5. I've convinced my friends and family members not to buy products that are harmful to the environment.					
6. I only buy organic food with environmental certificates since it is ecologically correct.					
7. I always choose products					

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
which cause the least damage to people and to the environment.					