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De-marketing As A Strategic Tool For Managing Customer Excessive Demand within The Shortage of Environmental Recourses of Water: Empirical study in Jordan¹

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Abstract: Jordan has one of the lowest levels of water in the world, with Jordan's population is expected to continue to grow, the gap between water supply and water consumption (demand) threatens to wider significantly. On the other hand, the exploitation of new water supply recourses is costly, therefore, Jordan authorities invested heavily in the development of water infrastructure and tools to lower the excessive demand of water with the danger of water supply deficiency. This forces water supply corporation to act extensively to utilize all de-marketing tools to deal with this problem along with governmental parties. As a result of these challenges, the researcher intended to examine the relationship between de-marketing tools as a strategic option to lower the excessive demand (consumption) of water in Jordan through using different de-marketing tools represented by higher prices of water bill, counter advertising, warning labels, limited advertising, limited distribution, availability of substitute sources and reducing the quantity of water supplied during summer season. An analytical analysis of all these strategic options are considered by the researcher in order to examine the relationship between de-marketing tools adopted by the water municipal corporation and government of Jordan in order to lower the excessive demand of water and to find out solutions for this problem. The study concluded that all related parties in Jordan are working together in order to utilize de-marketing tools as a strategic option to solve this extensive problem. Finally the paper provided certain recommendations for water municipal corporation and to the government of Jordan to adopt all de-marketing tools which will help in dealing with water shortage problem.



Keywords: *De-marketing, Strategic Tools , Water Supply, Jordan*

1. Introduction:

Modern marketing trends are focusing on meeting customer needs and wants and motivating them to purchase more and more in order to achieve firm's objectives. But this trend was criticized by many practitioners and created a harmful customer habits for the society , environment and economical one. For this reason marketers specialists are more aware to redesign their marketing strategies in order to instruct the customers of how to rationalize consumption behavior specifically for water and other goods and services which have limited resources in the market. In this trend de-marketing as a concept was first introduced in the year 1971 through which some problems are faced related to the firms which cannot supply sufficient products which matches market demand through discouraging demand for certain products.(Kern,2006)

The concept of de-marketing was taken into consideration by Kotler and Levy in 1971. De-marketing is defined by them as 'that aspect of marketing that deals with discouraging customers in general or a certain class of customers in particular; on either a temporary or permanent basis'

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(Kotler and Levy, 1971). It is important to note that de-marketing is not a new concept as such is not the opposite of marketing, but rather 'an integral part of general marketing' (Cullwick, 1975). De-marketing is sometimes equated with counter-marketing (Golden and Suder, 1994; Groff, 1998; Moore, 2005; Wall, 2005 and Kern (2006) ,Musdiq and Maseer (2012),Solly(2016)Salem (2018)). The another's believe that it is important, to clarify the differences between the two marketing approaches, as they address different demand situations. (Gallagher, 1994) indicates that both the approaches are used to reduce the level of demand, on the other hand, counter-marketing is applied in situations where the product is not preferred and the marketer wants to destroy demand totally . Alcoholic products, for example, have been subject to governmental counter-marketing programs as it has unhealthy social behavior like 'binge' drinking, drink-driving and unsafe sex. The main aim of de-marketing, as (Kotler and Armstrong, 2001) point out, 'is not to destroy demand but only to reduce or shift it to other period and time or place '. De-marketing is used when the demand for the product is perceived to be too high ,not necessarily by the consumer, but rather by the producers (Gallagher, 1994). This differentiation is important as the objective of the marketer is different in each situation as explained; in the former demand is to be destroyed, in the latter demand is to be reduced or shifted without damaging the image of the producer or the product itself. The purpose of de-marketing might in fact be to enhance the quality while (and by) reducing the quantity.

In Jordan water shortage is consider to be one of the most important problem facing water corporation to deal with, as a result of which all efforts are done by all parties involved to solve this problem. According to data published; Jordan is one of the poorest countries in the world with minimum resources of water supply and Jordan has one of the lowest levels of water in the world, with Jordan's population is expected to continue to grow, the gap between water supply and water consumption (demand) threatens to wider significantly. On the other hand, the exploitation of new water supply recourses is costly, Jordan invested heavily in the development of water infrastructure and tools to lower the excessive demand of water with the danger of water supply deficiency. This forces water supply corporation to act extensively to utilize all de-marketing tools to deal with this problem along with governmental parties .(Kern, 2006, Musdiq and Maseer, 2012) Salem, 2015) ,Solly, 2016) and Salem, 2018)

2. Research Problem:

Most of the world countries are facing water shortage problem due to the extensive consumption of water and increasing the gap between water supply and water demand along with increasing the population size in almost all the courtiers generally and Jordan Particularly. For this reason de-marketing is considered to be an essential step to be taken by all the parties involved to lower the demand for water within the limited supply resources. De- marketing is a challenge for such corporations and governments through which rationalization of water consumption can be made on the short and long run. This created a burden on all the parties involved in this issue to find out strategies to deal with water shortage problem either through price increasing or regulations to lower down the consumption of water in Jordan. Based on the above mentioned gap the researcher formulate the following question as a research problem:

1. Do Jordanian customers are aware of water shortage problem in Jordan ?
2. Do water corporation in Jordan uses de-marketing strategies to deal with water shortage problem?
3. Do prices increment lower customer consumption of water in Jordan?
4. Do governmental regulations are rationalizing customer water consumption in Jordan?
5. Do limited advertising help in reducing customer water consumption in Jordan?
6. Do limited distribution help in reducing customer water consumption in Jordan ?

3. Research Importance :

The importance of this research comes from the importance of water shortage problem in Jordan, which is a big burden on the government of Jordan and civil organization institutions and particularly on water corporation in Jordan. Water is the essence of every activity in any economy in the world, and its shortage may create further complications and obstacles for any country economically, socially, politically and culturally. For this reason the research is considering an important topic which may have great impact on all activities in Jordan.

4. Research Objectives:

This paper aims to achieve the following objectives:

1. Identifying the level of consumer awareness toward the importance of rationalization of water consumption in Jordan.
2. Identifying the role of price increment in lowering water consumption.
3. Identifying the role of government regulations in lowering water consumption in Jordan.
4. Identifying the role of water limited distribution in lowering water consumption in Jordan.
5. 5-Identifying the role of water corporation's advertising in lowering water consumption in Jordan.

Based on the above objectives the present study will provide a major contribution to the related and concerned parties in Jordan to solve the problem of water shortage in Jordan by taking the results of the present study seriously and knowing the main ways to solve this problem which is accelerating tremendously in Jordan .

5. Research Hypothesis and Model :

Based on the research objectives and questions ; the researcher supposes the following:

HO: There is no statistical significant relationship ($\alpha \leq 0.05$) between de-marketing strategy and lowering water consumption in Jordan.

The following sub hypothesis are supposed by the researcher

HO1: There is no statistical significant relationship ($\alpha \leq 0.05$) between water increasing prices as a de-marketing strategy and lowering water consumption in Jordan.

HO2: There is no statistical significant relationship ($\alpha \leq 0.05$) between limited distribution as a de-marketing strategy and lowering water consumption in Jordan.

HO3: There is no statistical significant relationship ($\alpha \leq 0.05$) between limited advertising as a de-marketing strategy and lowering water consumption in Jordan.

HO4: There is no statistical significant relationship ($\alpha \leq 0.05$) between governmental regulations related to water as a de-marketing strategy and lowering water consumption in Jordan.

HO5: There is no statistical significant relationship ($\alpha \leq 0.05$) between water substitute resources as a de-marketing strategy and lowering water consumption in Jordan.

• Research Model

The researcher designed the research model based on literature review and previous studies as shown in figure 1-1 (Musdiq and Maseer, 2012), (Solly, 2016) (Salem, 2015), and (Salem et. al, 2018)

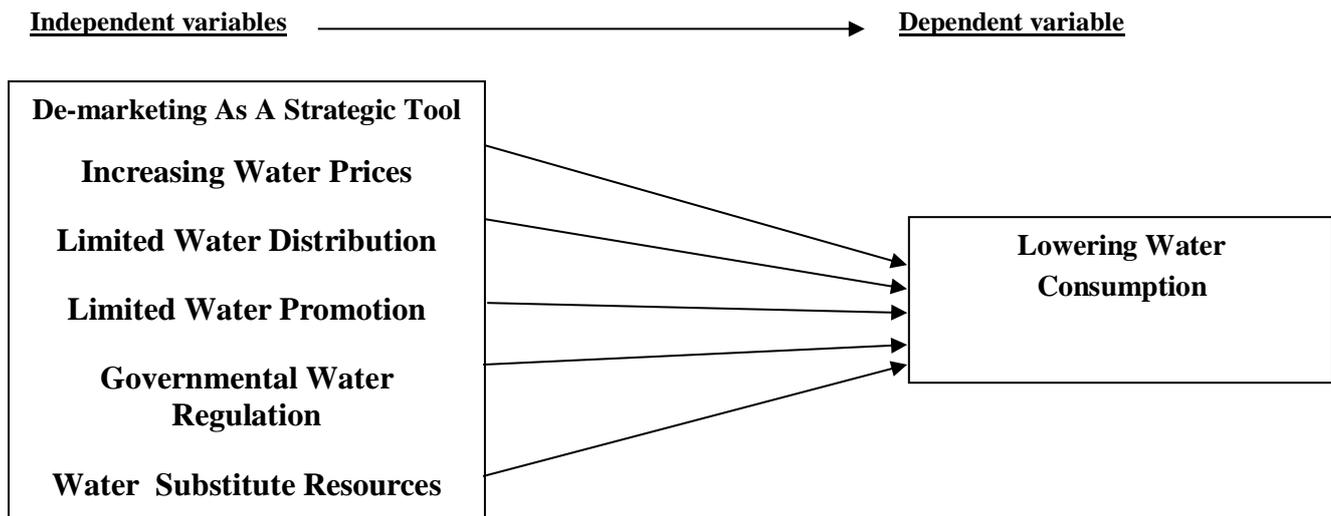


Figure (1): Research Model

6. Literature Review:

It is proposed that sellers can use de-marketing as a strategic tool in order to manage buyers' demand for products and quality perceptions strategically. Considering a seller of a product with quality uncertain to consumers; intensive marketing activities are made by marketers which may have its immediate appeal of boosting expected sales to consumers. For instance, advertising for any product attracts the consumers who would like to go for an enjoyment and satisfy their needs for certain product. On the other hand, distributing free samples raises product awareness, and organizing trade shows familiarizes the market with new product features for certain markets. However, this benefit comes at a hidden cost- intensive marketing activities also raises consumers' expectation of early purchase. Market response despite heavy marketing tools, doubt over product quality. The rest of the market would likely speculate that those who searched for more information about a new products to decide whether to buy it or not, who tried free samples, and who attended trade shows were persuaded to buy the product due to the influence of marketers activities represented by promotional tools (Goldstein 2009). On the other had the producers may chose a more modest level of marketing activities, which may made the market to give attributed slow response to a lack of promotion, and considered sales that beat expectations as very strong indicators of quality. Indeed, de-marketing of products turned out to be a new trend in today's markets ” (Goldstein 2009). This is explained by a two model. A monopolist producer privately knows the quality of its product, which could be either high or low. A consumer who has high expectation. In the first period, the producer determines the level of marketing efforts and an introductory price for first-period consumer, whom known as “early adopters.” The level of marketing activities and the introductory price are publicly observed. Marketing activities improve demand; for concreteness, it is assumed that marketing activities increase the expected share of consumers who consider the product in the sense of first-order. Each interested early adopter then conducts a private inspection of the product which imperfectly detects low quality, and decides whether to purchase or not . In the second period, first-period sales volume further unfolds as a publicly observed statistic. The marketers then set the price for late adopters, and late adopters decide whether to purchase based on their observation of first-period market efforts and sales, as well as their own inspection outcomes. When marketing programs and production are costless, a low-quality buyers always want to mimic its high-quality counterpart. Therefore, in equilibrium a high-quality buyer maximizes its expected profits and a low-quality buyer copies the high-quality marketer's activities and efforts. On the other hand, a high-quality consumer would optimally charge an introductory price such that interested early

adopters buyers who receive a positive inspection outcome are just willing to buy. It follows that first-period sales reflect early adopters' inspection results and are interested in quality. Importantly, if an early adopter buyers did not try the product, late adopters buyers face two explanations- it could be that this early adopter buyers are simply did not consider the product due to insufficient marketing activities, or that they considered the product but detected a problem during their inspection. A tradeoff therefore emerges in choosing the optimal level of marketing activities which should be made by marketers. While intensive marketing programs help increases buyer interest ex ante, ex post it aggravates late adopters' doubt over quality if first-period sales fail to excel. It is to be derived that conditions for de-marketing to increase in equilibrium, whereby the producer does not choose the highest level of marketing activities, although they are costless. The purpose of de-marketing is to build a strong quality image in the long run at the cost of current sales. Therefore, de-marketing is satisfactory only when the relative mass of late adopters buyers are sufficiently high. In addition, de-marketing is worthwhile only if consumers are sufficiently uncertain about quality. Specifically, if consumers are very pessimistic, the producers/ marketers should choose full marketing efforts to maximize the chance of achieving stellar first-period sales to prove its high quality to late adopters buyers. If they are very optimistic about quality, they will have high willingness to pay more for the product marketed. Consequently, there will be little chance for improvement in quality perception and thus less return to de-marketing is given. In this case, the marketers should again choose full marketing efforts and maximize expected sales volume to the market. New normative insights emerge reconsidering familiar marketing problems from the de-marketing perspective. For example, contrary to recommendations from established advertising scheduling programs, marketers may benefit from conservative advertising efforts during the early stage of the product life cycle i.e introduction stage. In case of low product launching, consumers can sue insufficient advertising programs, rather of inadequate product quality. Similarly, when a marketers can choose between multiple markets to serve, selecting the market with the most suitable potential does not always help the firm, because any lack of interest despite great match of suitable potential can emanate a particularly detrimental message about product quality. This issue is especially relevant in selecting the test market for new products because consumers' quality beliefs are important for national launch. It may be sensible to choose test markets where the product is less likely to expose , so that any positive responses from these markets will be more convincing signs of high quality for marketers which may help them to reduce marketing efforts to be done by marketers (kern, 2006).

- **De-marketing Concept :**

De-marketing phenomenon caught the attention of academic researchers early in the 1970's. It is mainly discussing why marketers would intentionally reduce demand. (Kotler and Levy, 1971) outline several possible reasons. "General de-marketing" which discourages consumers in response to excess demand; "selective de-marketing" which helps a marketers to quit undesirable market segments; and "ostensible de-marketing" which creates a perception of limited supply to actually increase demand. Consistent with the notion of ostensible de-marketing, (Cialdini, 1985) suggests a psychological tendency for humans to demand products that are less available, (Amaldoss and Jain ,2005) show that limited availability of some products satisfies consumers' need for uniqueness, while (Stock and Balachander, 2005) demonstrate that scarcity of products can an indicator for high quality. (Gerstner et al., 1993) propose the notion of "differentiating de-marketing," whereby one company introduces a unique attribute to differentiate its products from its competitor and avoid profit- lowering price wars. In a related study, (Berger and Mens, 2009) find that first-consumers which enjoy fast initial adoption for a product are less likely to persist because consumers are perceiving fads as negatively issue. Literature related to de-marketing identified a different market mechanism which is adopted by marketers. First instance, the marketers suppresses marketing today

to grow demand tomorrow, rather than to lower demand which is generally in response to capacity constraints. Secondly, the purpose of de-marketing is not to abandon an unprofitable market segment, but to build a high quality image in the segment of late adopters markets. In fact, it is found that the faster this segment grows, the more likely that the marketers will pursue de-marketing. Third, unlike ostensible de-marketing which actually attracts customers, de-marketing in its general framework indeed discourages demand directly by lowering the expected degree of consumer interest for a product. Finally, it is to consider a monopolistic seller who is under no competitive pressure to differentiate their products. By making these assumptions, researchers isolate a new role of de-marketing in managing buyers' quality inferences. This mechanism is focusing on the observational learning literature, which studies how observing others' choices affects one's own decision making. The seminal works of (Banerjee,1992), and (Bikhchandani, et al., 1992) prove that, on the demand side that mere observations of peer consumers' decisions without knowledge of their private signals; may lead to make choices within a society uniform. A few studies extended the literature by looking at supply side pricing strategies given observational learning. For example, (Caminal and Vives,1996) examine a duopoly market where customers infer product quality from market shares. This inference process motivates each of the producers to secretly lower price in order to gain market share, thus increasing competition. (Taylor,1999) explores optimal real estate property pricing strategies when a house's long time on the market raises doubts over the quality of that product. (Bose et al., 2006) study the long-run dynamic pricing decisions of a monopolistic seller who does not know the quality of its product which affect de-marketing programs and strategies. Consistent with the observational learning literature, buyers infer product quality from others' purchase decisions. However, the literature reviewed in several ways related to de-marketing is considering a monopolistic seller who has private information about its quality as in (Taylor, 1999), but it is not confined to products that only serve one buyer and thus only generate negative observational learning. Furthermore, analysis goes beyond pricing and explores the role of a broadly defined set of marketing efforts made by marketers to lower the demand for certain products for several reasons. It is the intensity of marketing efforts that determines the direction and magnitude of the observational learning effect. (Caminal and Vives, 1996), (Zhao,2000), (Kern,2006), (Musdiq and Maseer, 2012), (Salem, 2015), (Solly, 2016) and (Salem et. al, 2018). The main purpose of de-marketing as it is clear from the above brief is to enhance the quality while (and by) reducing the quantity.

Research on de-marketing has focused on two areas (Caminal and Vives, 1996), (Zhao,2000), (Kern, 2006), (Musdiq and Maseer, 2012), (Salem, 2015), (Solly, 2016) and (Salem et. al, 2018) :

1. de-marketing in the case of product shortages, particularly during the 1970s when concerns about energy and water supplies were high for example: (Cullwick, 1975), (Gallagher, 1994), (Kotler, 1974), (Monroe and Zoltners, 1979), (Shama, 1978), (Kern, 2006), (Musdiq and Maseer, 2012), (Salem,2015), (Solly, 2016), (Salem et. al, 2018)
2. de-marketing the consumption of public services, predominantly water and power services (for example: (Borkowski, 1994), (Kindra and Taylor, 1995), (Mark and Brennan, 1995), (Mark and Elliott, 1997), (MacStravic, 1995) and (Kern, 2006), (Musdiq and Maseer, 2012), (Solly, 2016) and (Salem et. al, 2018). Most of these studies are theoretical in nature and have focused on discussing and prescribing de-marketing actions derived from (Kotler and Levy's, 1971) seminal article on de-marketing.

• Types of De-marketing

In the literature reviewed (Kotler and Levy, 1971) describe four different types of de-marketing as follows: general, selective, ostensible and unintentional de-marketing as earlier

mentioned. (Kotler and Levy, 1971), (Caminal and Vives ,1996), (Zhao,2000), (Kern,2006), (Musdiq and Maseer, 2012), (Salem, 2015), (Solly, 2016) and (Salem et. al, 2018).

1. General De-marketing:

Which is required when the aim of marketer is to reduce the total demand for a certain product

2. Selective De-marketing:

It is used when the demand from certain group of customers need to be reduced

3. Ostensible De-marketing:

This type of De-marketing is some how confusing to customers where by giving the appearance of aiming to reduce demand for a particular product, it is actually meant to initiate the contrary by the marketers , which is an increase in the demand for that certain product .

4. Unintentional De-marketing:

This type of de-marketing occurs when the attempts to increase the demand of certain product, which actually results in driving customers away from this product.

The present study will not be concerned with ostensible or unintentional de-marketing, since these are not concepts that are applicable in a situation addressing excess demand for water problem shortage. Excess demand for water in some areas is a very complex issue. It does not simply mean that the total level of consumption is too high for water resources. Excess demand for water often relates to specific experiences or activities within and also frequently relates to specific sites, rather than to the whole area due to some demographic features of the consumers in some specific areas. De-marketing for water is therefore, concerned with reducing demand for water in total or selectively and redistributing demand spatially or temporarily on different seasons.

(Groff, 1998) identified three specific situations of excess demand in which the product management agency such as Water Corporations which may use de-marketing strategies to measures:

1. Temporary shortages– as a result of either a lack of water supply (water are finite resources and demand may peak around certain times of the year)
2. Underestimation by the management of demand for water or programs and experiences; Chronic over popularity– the popularity of water or specific area or experience can seriously threaten the quality of the customer experience and also damage the natural resource that attracts water resources and the different uses and programs demanded by the customers and the public.

• Demarketing As Strategic Marketing Tool :

In this section of the study the researcher will review the main de-marketing strategic tools adopted by Water Municipal Corporation in Jordan which are related to reducing water demand to face the shortage of water supply in Jordan.

Like marketing measures in general, de-marketing can be represented by the 4 P's of the marketing mix i.e product, price, place and promotion. De-marketing measures suggested or identified by previous researchers in various fields including, water supply, Electricity supply, tourism and protected area management, grouped according to their association with the 4 P's (Kern 2006):

De-marketing main strategic tools and measures suggested/identified are as the following Beeton, 2001,2002,2003), (Beeton and Benfield, 2002), (Beeton and Pinge, 2003), (Benfield, 2001), (Borkowski, 1994), (Buckley, 2003a), (Carlsen and Ali-Knight, 2004), (Clements,1989), (Fluker and Richardson, 2004), (Groff,1998), (Hill and Pickering, 2002), (Kindra and Taylor, 1995), (Mark and Brennan, 1995), (Mark and Elliot,1997), (Shama,1978), (Wall,2005), (Wearing and Archer, 2001)and (Kern, 2006), (Musdiq and Maseer,2012), (Solly, 2016) and (Salem et. al, 2018):

1. Product:

This is done by Water municipal corporation in Jordan through several strategies which are as follows : narrowing the product lines , using lower-grade material in production/reducing the level of product which motivates customers to find out alternative resources for water , discouraging certain facilities that attract customers for water , reducing the maintenance of certain lines in order to lower the demand for water in certain areas.

2. Distribution:

(Place) This can be done through the following strategies: limiting distribution to make product less available, reducing the convenience of access to certain services, limiting total quantity of products/services, limiting quantity per customer, introducing booking or reservation systems for water supply, introducing permit or license systems which is pre-paid , using an allocation system for customers on a 'first come first served' basis based on social and biological carrying capacities , limiting the overall capacity, limiting total customer numbers, developing a strategy to encourage use of other sources, permitting certain activities only under supervision of appropriately educated personnel (such as engineers), making access to areas where more water is available.

3. Price:

This can be done through the following strategies: introducing or increasing prices/user fees, discouraging/stopping price discounting practices for water during summer season, and introduce differential pricing where the price increases disproportionately with increasing bill price with increasing consumption in consumption.

4. Promotion:

This can be done through the following strategies: ceasing or decreasing promotion for water consumption in specific markets, non-promotion of certain services, promoting or stressing restrictions related to water consumption, warning customers of environmental circumstances under which activities may be curtailed with heavy water consumption behavior, promoting and stressing restrictions or difficulties with water getting resources, educating journalists and media regarding appropriate environmental behavior for water consumption, promoting and stressing appropriate behavior/minimal impact behavior in promotional material, and highlighting the environmental degradation that could occur if consumption of water is over than required.

7. Data Collection Methods

The researcher has used two data collection methods; Primary data and Secondary data as follows which are suitable for this type of studies:

- a) Primary data: A questionnaire was used to collect data about the variables used in the study according to literature review and previous studies. The researcher distributed the questionnaire in person to the research sample.
- b) Secondary data: which are data collected from different resources in libraries and the review of literature and previous studies for the theoretical framework, which include:
 - Books and reports about the effect of de-marketing on consumer buying behavior.
 - Information available on websites related to de-marketing and its impact on consumer buying behavior.

• Data Collection Tools

The researcher designed a questionnaire based on literature review and previous studies. The questionnaire was reviewed and approved by specialists in the field of marketing from different universities. The questionnaire was translated and distributed to the research sample for simplifying purposes to answer the questions honestly and confidently.

The questionnaire is divided into two parts as follows:

Part 1: Includes demographic data about the respondents' Gender, Age, Marital status, Educational level, and Income.

Part 2: Discusses the independent variables which are de-marketing as a strategic tool and its impact on the dependent variable which is the water consumer buying behavior. This second part consists of 21 questions.

Variable 1: The questions (1-3) of this variable measure increasing prices of water as a strategic de-marketing tool on Water Consumption Behavior.

Variable 2: The questions (4-6) of this variable measure limited resources of water as a strategic de-marketing tool on Water Consumption Behavior.

Variable 3: The questions (7-10) of this variable measure limited promotion of water as a strategic de-marketing tool on Water Consumption Behavior.

Variable 4: The questions (11-14) of this variable measure governmental regulations of water as a strategic de-marketing tool on Water Consumption Behavior.

Variable 5: The questions (15-18) of this variable measure the measure water substitution sources as a strategic de-marketing tool on Water Consumption Behavior.

A Likert Scale was used of five degrees of agreement to determine the importance for each question in the questionnaire.

Table(1): Likert Scale

Importance	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Degree	1	2	3	4	5

• Methodology

The study aims to explain the effect of de-marketing as a strategic tool on lowering water consumption behavior. The study includes 5 independent variables as shown in Figure (1-1) which form one main hypothesis and five sub hypotheses. The researcher used the descriptive statistical analytical method for describing the phenomenon of the population, the researcher depended upon the questionnaire for collecting data to analyze and test the hypothesis and literature review was used for the theoretical part.

• Research population

The research population in this research is all consumers of convenience goods in Northern, Southern, Eastern and Western Amman which are estimated to be more than 1 million in Amman City

• Research Sample

Regarding to Sekaran table (Sekaran, 2003) the representatives sample shouldn't be less than 384, for more accuracy and to avoid mistakes, the researcher distributed 500 questionnaires in Amman city for the population. About 43 were unreturned which represents 8.6% of all questionnaires. After reviewing them, 36 questionnaires out of 457 were refused due to some data and questions left blank, so 92.1% of the total returned questionnaires were valid to be analyzed. The sample size is 421 respondents. The researcher depended upon random samples for distributing the questionnaires.

- **Validity and Reliability**

1. Reliability

The reliability test is conducted. Coefficient Cronbach's Alpha is a measure of reliability or internal consistency. A value of Cronbach's Alpha of (0.7) or above is consistent with the recommended minimum values stated by (Nunnally, 1978).

Table (2) shows the reliability of the variables (Cronbach's Alpha).

Table (2): Reliability of the Variables (Cronbach Alpha)

Number	Variables	Questions	Cronbach's Alpha
1	Increasing Prices Strategy	Q 1-Q 3	0.801
2	Limited Distribution Strategy	Q 4-Q 6	0.881
3	Limited Promotion Strategy	Q 7-Q 10	0.903
4	Governmental Regulation Strategy	Q11-Q 14	0.891
5	Water Substitute Resources	Q 15-Q 18	0.887
6	Lowering Water Consumption Behavior	Q 19-Q 25	0.857
	All Items	25	0.898

From the table, it is observed that all study variables have got more than (0.7), the largest variable's number belongs to limited promotion strategy (0.903), and the lowest variable's number belongs to lowering water consumption (0.857). For all items the Coefficient Cronbach's Alpha is (0.873). Therefore the research results can be accepted according to Nunnally (1978).

- **Test of Data Validity**

Normal Distribution

One of the conditions in using linear regression test is that the data should show normal distribution as indicted by Skewness and Kurtosis. When the skewness is close to (0) and Kurtosis is close to (0) or (3) this indicates that the data are in normal distribution. (Landaus, et, al. 2004), table (4-10) shows the result of normal distribution of the Independent variables.

Table (3): Normal Distribution of the Independent Variables

	Increasing Prices	Limited Distribution	Limited Promotion	Governmental Regulations	Water Substitute Resources
Skewness	0.035	0.035	0.164	0.234	0.235
Kurtosis	0.123	0.134	0.393	0.186	0.223

The table explains that all the Skewness and Kurtosis are closed to (0), this means that the data belongs to normal distribution.

Multicollinearity Test

The Multicollinearity test indicates if there is a strong relationship between the independent variables by measuring the influence of each independent variable on others. To measure the Multicollinearity we use the correlation indicator, to find out this and measure the strength and the

indication of the relationship and phenomenon, the correlation between the variables has to be (0.9) or less (Pallant, 2003).

Table (4) shows that all the coefficient relations are less than (0.9) so there is no existence of the Multicollinearity between the independent variables.

Table (4): Correlations of Independent Variables

		Increasing Prices	Limited Distribution	Limited Promotion	Governmental Regulations	Water Substitute Resources
Increasing Prices	Pearson Correlation	1	.537**	.226**	.228**	.203**
Limited Distribution	Pearson Correlation		1	.344**	.340**	.313**
Limited Promotion	Pearson Correlation			1	.336**	.386**
Governmental Regulations	Pearson Correlation				1	.372**
Water Substitute Resources	Pearson Correlation					1
	N		421	421	421	421

** Correlation is significant at the 0.01 level (2-tailed)

• Hypothesis Testing

The linear regression procedure examines the impact of the set of Independent variables on the dependent variable. In this research the hypothesis testing based on three regression linear types, Multiple, regression. For the main hypothesis the multiple regression is calculated.

Main Hypothesis

Ho: HO: There is no statistical significant relationship ($\alpha \leq 0.05$) between de-marketing strategy and lowering water consumption in Jordan.

Table (5) shows the Result of Multiple Regression for the Main Hypothesis

Table (6): Results of Multiple Regressions for the Main Hypothesis

Dependent Variable	R	R ²	F	DF	SIG	Independent Variable	B	T	Sig
Lowering Water Consumption	0.486	0.236	17.899	1	0.000	Increasing Prices	0.136	2.928	0.004
				420		Limited Distribution	0.164	4.324	0.000
				421		Limited Promotion	0.211	2.324	0.001
						Governmental Regulations	0.147	3.684	0.002
						Water Substitute Resources	0.116	3.077	0.003

Table(6) shows the dependent variable (lowering water consumption) and a set of independent variables (increasing water prices strategy, limited water distribution strategy, limited water promotion strategy, governmental regulations strategy, water substitute resources strategy) are significant, because **F** significant (0.00) is less than (0.05) therefore the null hypothesis is rejected and accept the alternative one is accepted which states that **There is statistically significant relationship ($\alpha \leq 0.05$) between de-marketing strategy and lowering water consumption in Jordan.**

The relationship between the dependent and independent variables is strong. It is more than (0.5) (Cohen, 1988), $R = 0.486$. Also, the $R^2 = 0.236$, which means that the independent variables contribution affects the dependent variable is about 23.6%.

Since the value of the calculated **t** for the variables (increasing water prices strategy, limited water distribution strategy, limited water promotion strategy, governmental regulations strategy, water substitute resources strategy) is more than the **t** Table value (i,e 1.96) it means that there is statically significant relationship between the independent variable i,e De-marketing as a strategic marketing tool and the dependent variable i,e lowering water consumption.

And by this, the main question of the study– Do water corporation in Jordan uses de-marketing strategies to deal with water shortage problem? And Do Jordanian customers are aware of water shortage problem in Jordan– is answered.

Based on the above results the present study provided a major contribution to the related and concerned parties in Jordan to solve the problem of water shortage in Jordan by taking the results of the present study seriously and knowing the main ways to solve this problem which is accelerating tremendously in Jordan.

8. Conclusion and Recommendations:

Based on the findings of the present research it was found that all the parties involved in the sample of the study, all de-marketing strategies are applied by the water corporation and the Government of Jordan, but still the problem is not solved specially with the increment of water supply problem and population growth in Jordan. Therefore, there should be a national and international plan to deal with water problem shortage in Jordan throughout extensive promotional programs to make consumers in Jordan aware about the problem of water shortage and rationalizing water consumption during summer season in which the main problem is faced in Jordan. On the other hand, all parties involved in this issue should work together in order to find out a solution for this problem specifically Worldwide organizations supported by Social Organizations working locally, nationally and globally.

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